

Service Manual



ORDER NO.
RRV1 3 8 0

CD CDV LD PLAYER

CLD-S280

CLD-S180

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	Remarks
	CLD-S280	CLD-S180		
TD	O	O	AC110 – 240V	
TD/CN	O	–	AC110 – 240V	
TL	O	–	AC110 – 240V	

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1. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- Parts list without notice are common for CLD – S280/TD, TD/CN, TL and CLD – S180/TD

1.1 PACKING

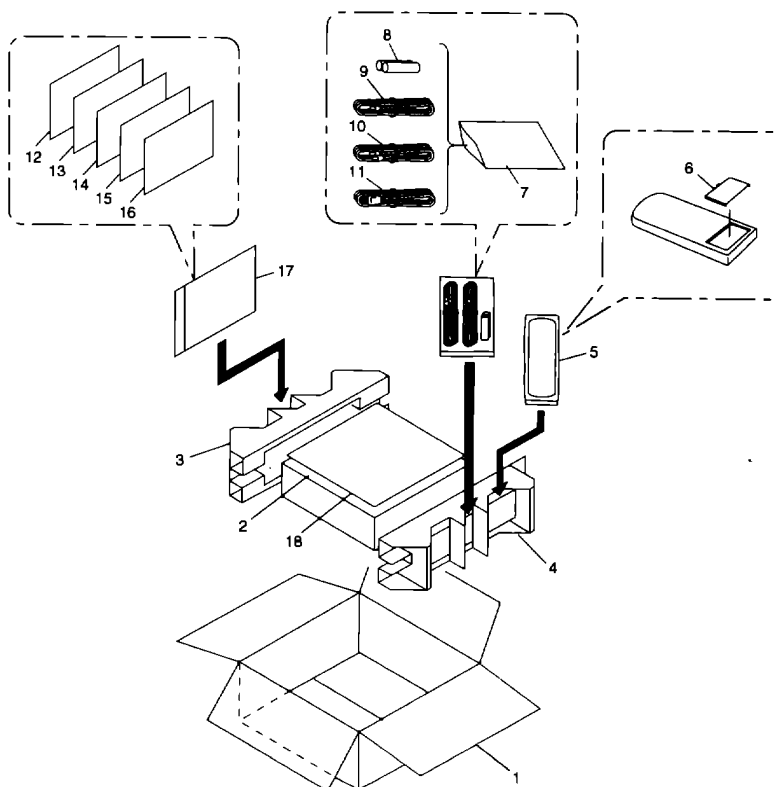
(1) CONTRAST OF CLD-S280/TD, TD/CN, TL AND CLD-S180/TD .

- CLD-S280/TD, TD/CN, TL and CLD-S180/TD have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			
			CLD-S280/TD	CLD-S280/TD/CN	CLD-S280/TL	CLD-S180/TD
Δ	1	Packing case	VHG1524	VHG1539	VHG1538	VHG1523
	11	AC power code	ADG1158	ADG1158	ADG1127	ADG1158
	14	Operating instructions (English/Chinese/Spanish/Portuguese)	VRG1004	VRG1004	VRG1004	Not used
	15	Operating instructions(Spanish/Portuguese)	VRD1050	Not used	Not used	VRD1050

(2) PARTS LIST FOR CLD-S280/TD

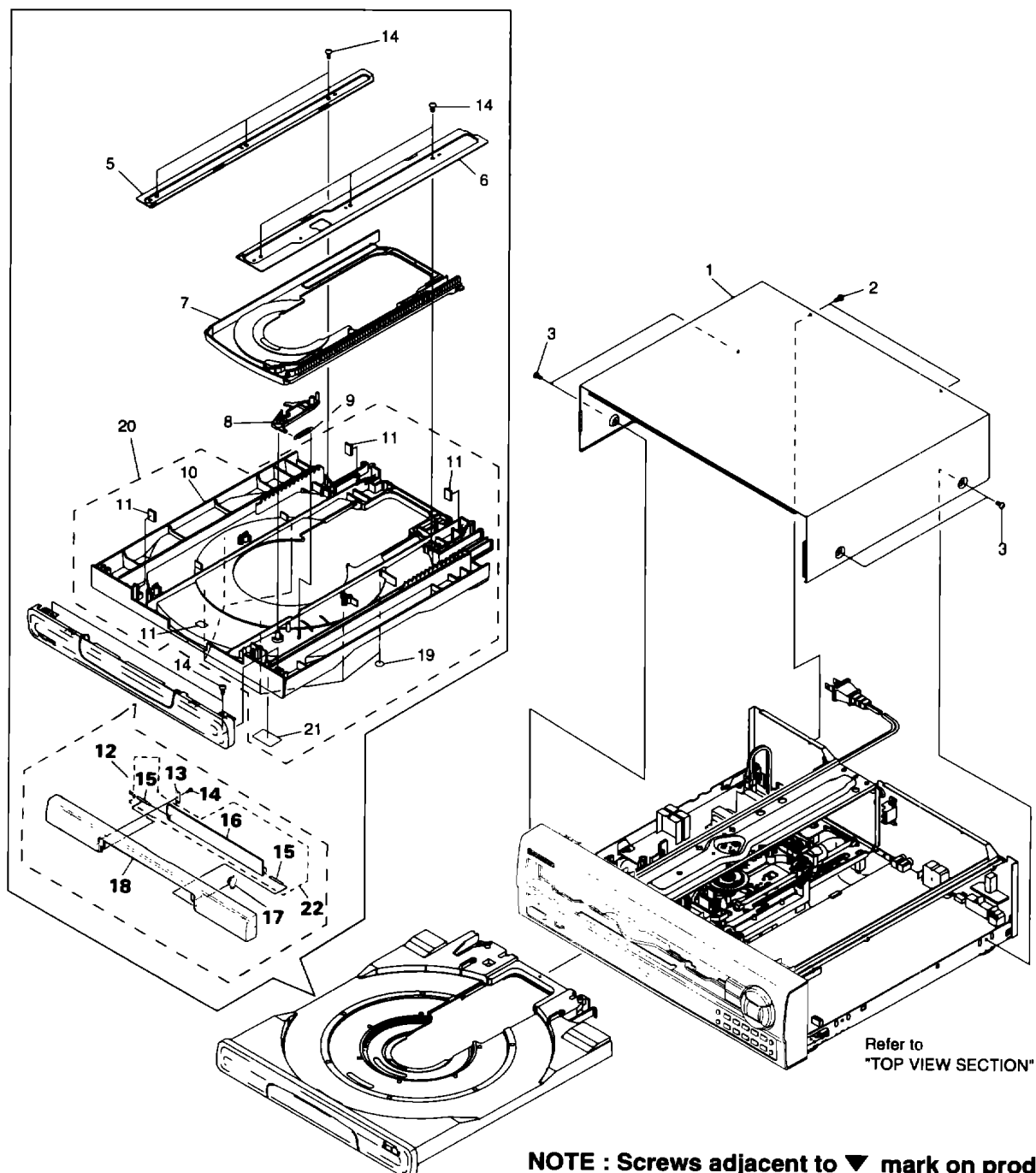
Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	Packing case	VHG1524	Δ	11	AC power code	ADG1158
	2	Mirror mat sheet	Z23 – 007	NSP	12	Warranty card	ARW1020
	3	Protector L	VHB1026		13	Operating instructions(English)	VRB1167
	4	Protector R	VHB1031		14	Operating instructions (English/Chinese/Spanish/Portuguese)	VRG1004
	5	Remote control unit	VXX2115		15	Operating instructions(Spanish/Portuguese)	VRD1050
	6	Battery cover	VNK2806		16	Operating instructions(Chinese)	VRD1043
NSP	7	Polyethylene bag(205×315×0.05)	Z21 – 038	NSP	17	Polyethylene bag	VHL – 014
	8	Battery (R6P, AA)	VEM – 013		18	Spacer	VHB1040
	9	Video cord	VDE1034				
	10	Audio cord	VDE1033				



1.2 EXTERIOR AND DISC TRAY SECTION

Mark	No.	Description	Parts No.
	1	Bonnet - S	VXX2117
	2	Screw	BBZ30P080FMC
	3	Screw	BCZ40P060FZK
	4	
	5	Guide plate (R)	VNE1939
	6	Guide plate (L)	VNE1938
	7	CD tray	VNK3007
	8	Lock plate	VNL1703
	9	Lock plate spring	VBH1188
NSP	10	LD tray	VNK3188

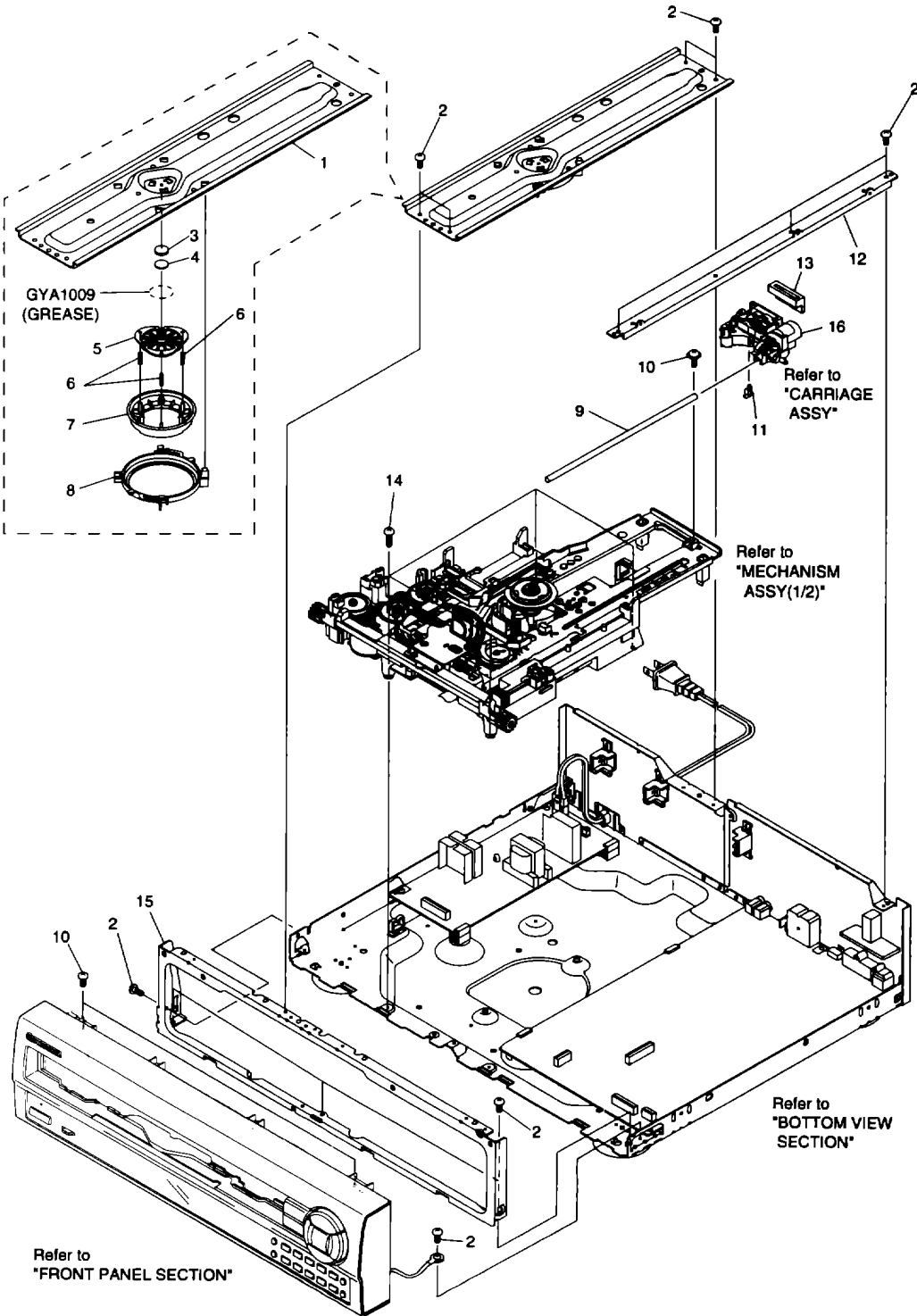
Mark	No.	Description	Parts No.
	11	Damp cushion	VEC1683
	12	Door spring	VBH1248
	13	Door holder	VNL1697
	14	Screw	BBZ30P080FMC
NSP	15	Door shaft	VLL1466
	16	CD door	VNK3316
NSP	17	Damper ASSY	VXA1999
	18	Tray panel	VNK3315
	19	Cushion	VEC1682
	20	Tray ASSY-S	VXX2309
	21	Label	VRW1289
NSP	22	CD door ASSY	VXA2237



NOTE : Screws adjacent to ▼ mark on product are used for disassembly.

1.3 TOP VIEW SECTION

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
A	1	Clamper arm	VNE1940	NSP	11	CA hook	VNL1698
	2	Screw	BBZ30P080FMC		12	PCB holder	VNE2034
	3	Rubber mat	VEB1114		13	FFC holder	VNL1706
	4	Thrust holder	VNL1663		14	Screw	BBZ30P100FMC
	5	Clamper head	VNL1649		15	Panel holder	VNA1464
	6	Clamp spring	VBH1192		16	Carriage ASSY	VWT1110
	7	Clamper	VNL1648				
	8	Clamper holder	VNL1636				
	9	Shaft	VLL1481				
	10	Screw	IBZ30P080FMC				



1.4 FRONT PANEL SECTION

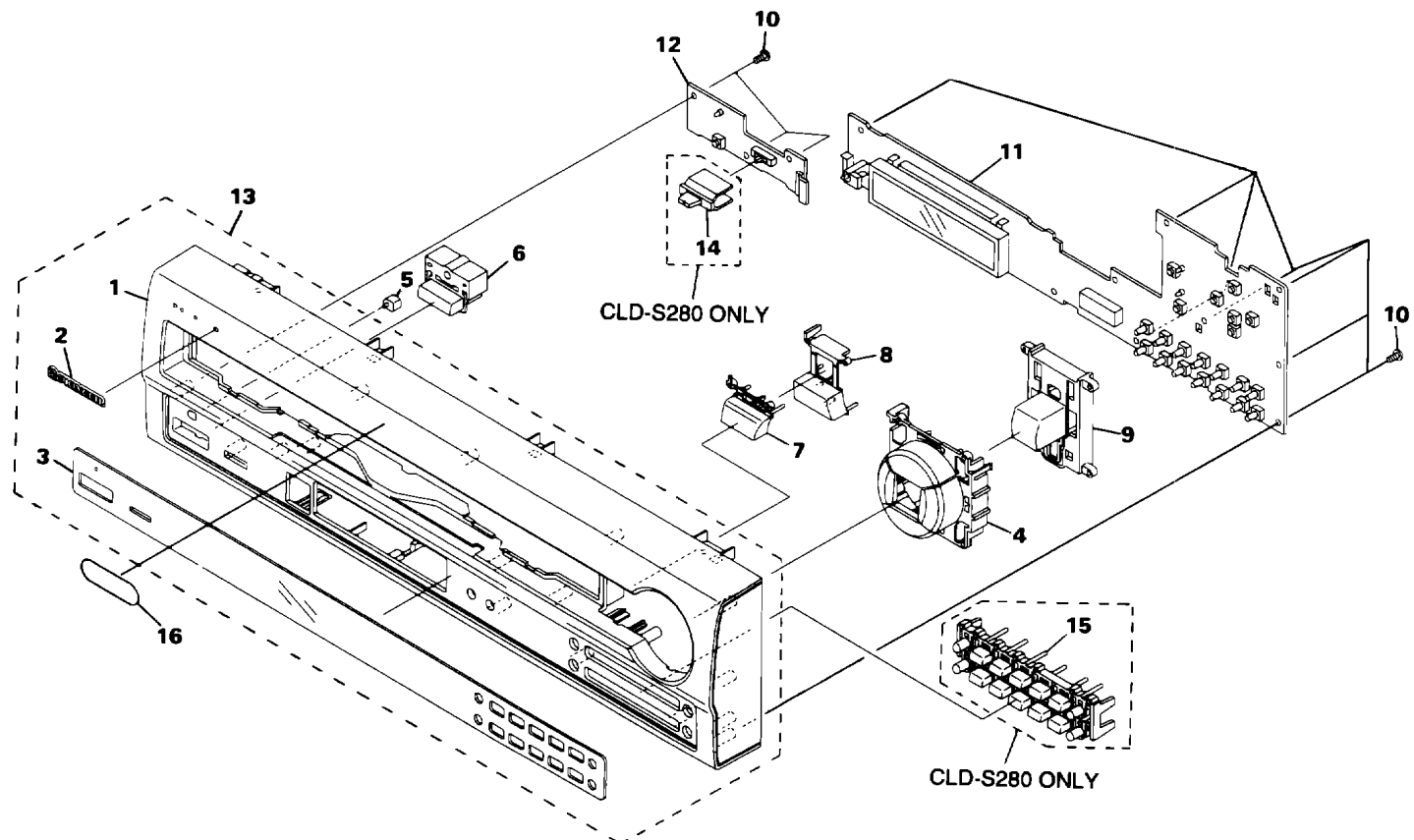
(1) CONTRAST OF CLD-S280/TD, TD/CN, TL AND CLD-S180/TD .

• CLD-S280/TD, TD/CN, TL and CLD-S180/TD have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			
			CLD-S280/TD	CLD-S280/TD/CN	CLD-S280/TL	CLD-S180/TD
NSP	1	Front panel	VNK3453	VNK3453	VNK3453	VNK3454
	3	FL lens	VEC1832	VEC1832	VEC1832	VEC1833
	11	FLKY ASSY	VWG1702	VWG1702	VWG1702	VWG1700
NSP	12	PWSB ASSY	VWG1703	VWG1703	VWG1703	VWG1701
	13	Front panel ASSY - S	VXX2371	VXX2371	VXX2371	VXX2372
NSP	14	Slide knob	VNK3455	VNK3455	VNK3455	Not used
	15	Ten key	VNK3329	VNK3329	VNK3329	Not used
	16	Getter	VRW1576	VRW1576	VRW1576	VRW1577

(2) PARTS LIST FOR CLD-S280/TD

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
NSP	1	Front panel	VNK3453	NSP	11	FLKY ASSY	VWG1702
	2	Pioneer badge	PAM1704		12	PWSB ASSY	VWG1703
	3	FL lens	VEC1832		13	Front panel assy - S	VXX2371
	4	Key	VNK3364		14	Slide knob	VNK3455
	5	LED lens	PNW2019		15	Ten key	VNK3329
	6	PW button	VNK2329	NSP	16	Getter	VRW1576
	7	LD key	VNK3319				
	8	CD Key	VNK3361				
	9	Play key	VNK3363				
	10	Screw	BBZ30P080FMC				



1.5 BOTTOM VIEW SECTION

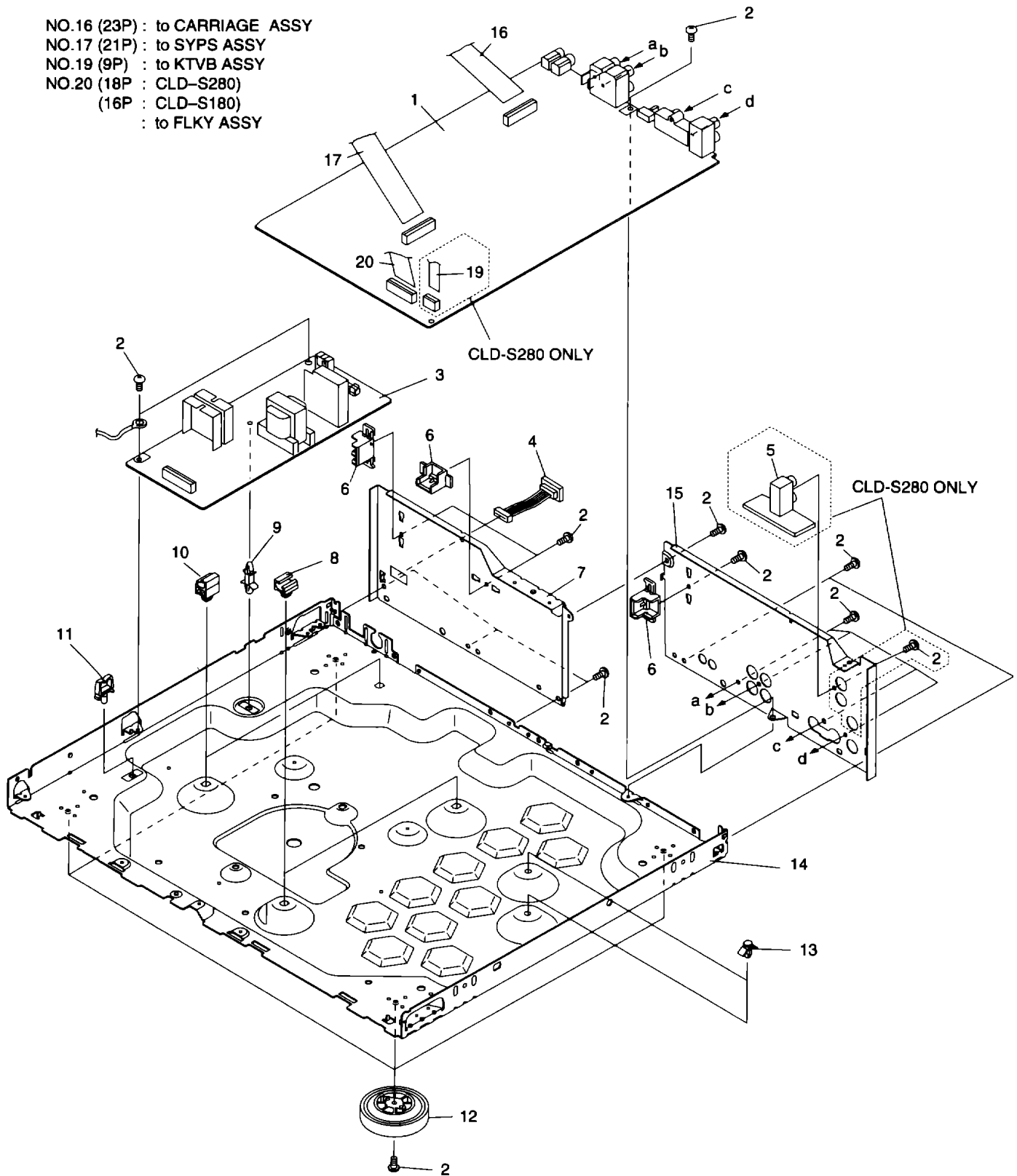
(1) CONTRAST OF CLD-S280/TD, TD/CN, TL AND CLD-S180/TD .

● CLD-S280/TD, TD/CN, TL and CLD-S180/TD have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			
			CLD-S280/TD	CLD-S280/TD/CN	CLD-S280/TL	CLD-S180/TD
	1	MOTHER ASSY	VWS1218	VWS1218	VWS1218	VWS1227
	5	KTVB ASSY	VWV1452	VWV1452	VWV1452	Not used
	7	Rear panel (R)	VNA1689	VNA1689	VNA1661	VNA1689
	15	Rear panel (L)	VNA1644	VNA1644	VNA1690	VNA1645
	19	Flexible cable (9P)	VDA1527	VDA1527	VDA1527	Not used

(2) PARTS LIST FOR CLD-S280/TD

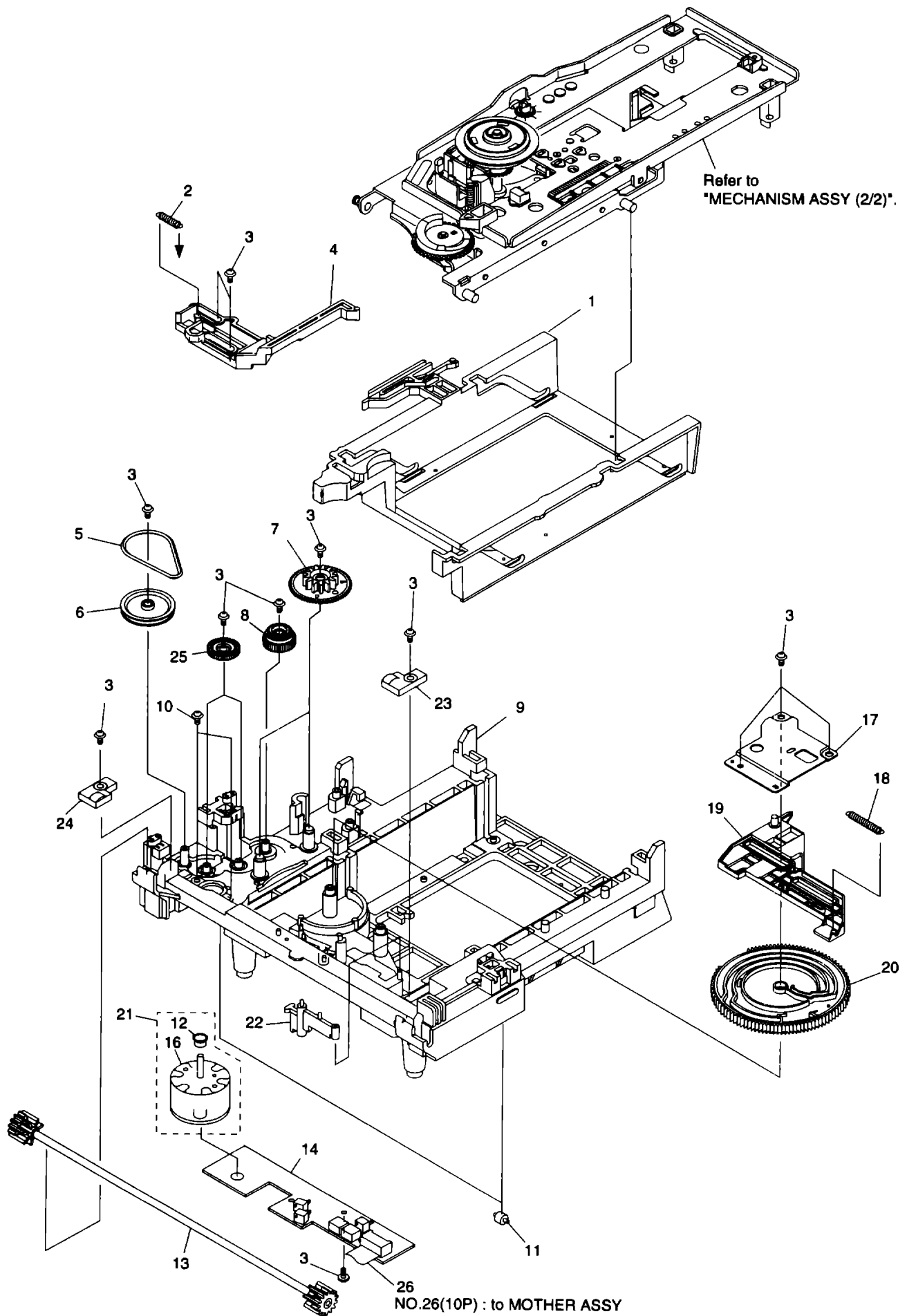
Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	MOTHER ASSY	VWS1218	NSP	11	Wire clip (H)	VEC1181
	2	Screw	BBZ30P080FMC		12	Insulator	PNW1912
△	3	SYPS ASSY	VWR1233		13	Card spacer	VEC1708
△	4	AC inlet ASSY	VKP2116	NSP	14	Chassis	VNA1461
	5	KTVB ASSY	VWV1452		15	Rear panel (L)	VNA1644
	6	Tray stopper	VNL1657		16	Flexible cable (23P)	VDA1464
	7	Rear panel (R)	VNA1689		17	Flexible cable (21P)	VDA1465
NSP	8	P plate holder	PNY - 405		18	
NSP	9	PC support	VEC - 269		19	Flexible cable (9P)	VDA1527
NSP	10	PCB hinge	VEC1174		20	Flexible cable (18P)	VDA1467



1.6 MECHANISM ASSY (1/2)

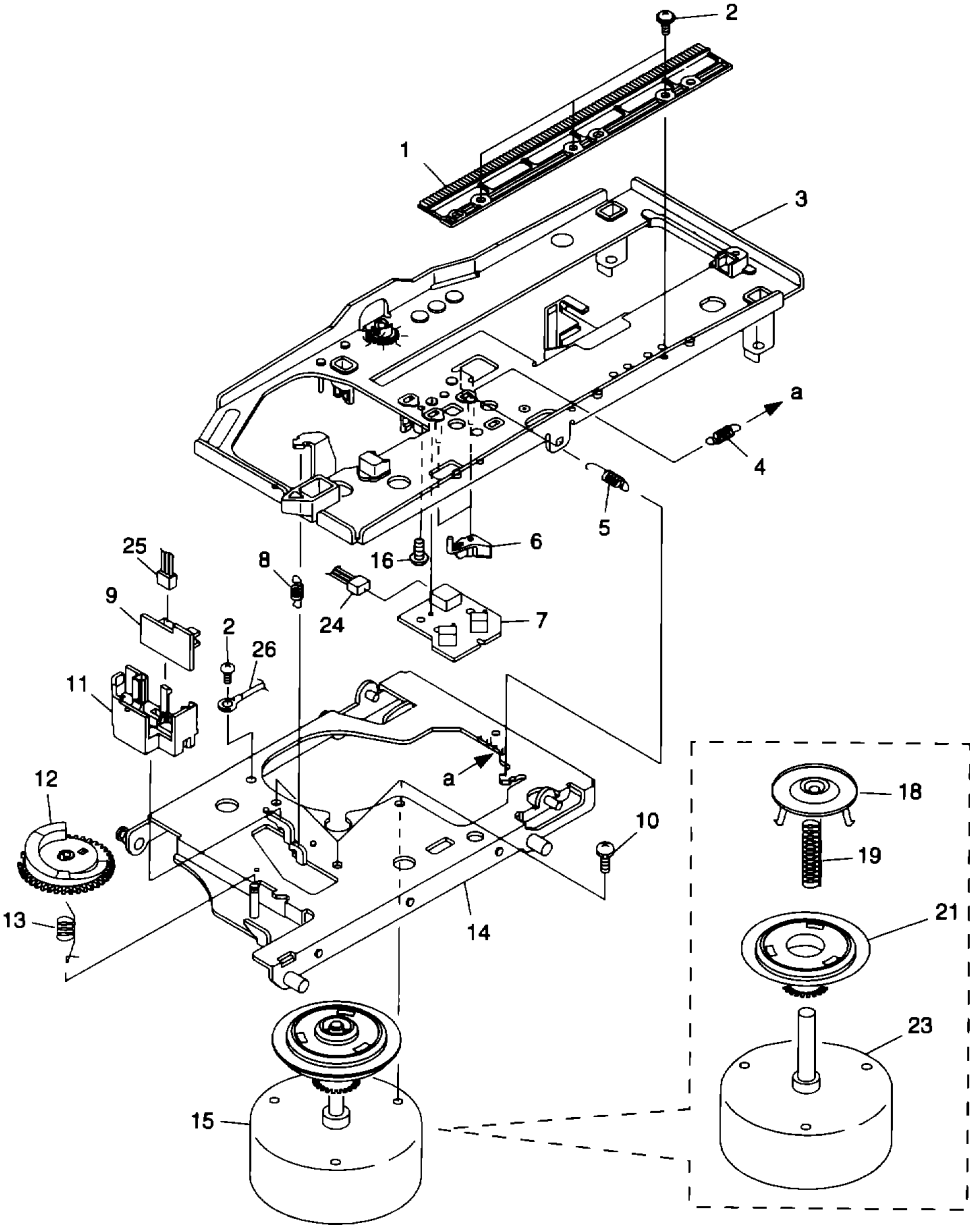
Mark	No.	Description	Parts No.
	1	Clamp cam	VNL1633
	2	CDP spring	VBH1191
	3	Screw	Z39 – 019
	4	CD plate	VNL1632
	5	Rubber belt	VEB1184
	6	Gear pulley	VNL1662
	7	Twin gear	VNL1626
	8	Center gear	VNL1660
	9	Mechanism base	VNK3239
	10	Screw	BMZ26P040FMC
	11	Roller	VNL1042
NSP	12	Motor pulley	VNL1630
	13	Synchro gear ASSY	VXA2105
NSP	14	LMSB ASSY	VWG1554
	15	

Mark	No.	Description	Parts No.
NSP	16	Carriage motor	VXM1033
	17	Shaft holder	VNE1942
	18	CAS spring	VBH1190
	19	Cam plate	VNL1631
	20	Cam gear	VNL1625
	21	Loading motor ASSY	VXX2045
	22	MB – switch lever	VNL1664
	23	Slider (R)	VNL1666
	24	Slider (L)	VNL1665
	25	Double gear	VNL1661
	26	Flexible cable	VDA1466



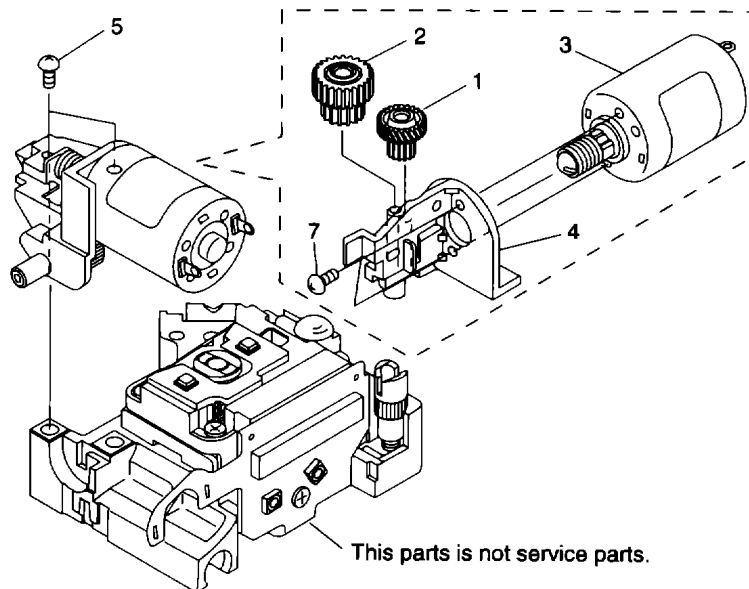
1.7 MECHANISM ASSY (2/2)

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
A	1	CA rack	VNL1647		16	Screw	IBZ26P120FMC
	2	Screw	IBZ26P060FMC		17	
	3	Tilt base	VNL1642		18	Centering hab	VNL1623
	4	Radial spring	VBH1246		19	Centering spring	VBH1083
	5	Thrust spring	VBH1245		20	
NSP	6	CA – switch lever	VNL1644	NSP	21	R – turn table ASSY	VXA2216
	7	PKSB ASSY	VWG1555		22	
NSP	8	Tilt tension spring	VBH1244	NSP	23	Spindle motor	VXM1057
	9	FG ASSY	VWG1556		24	Housing ASSY(3P:blue)	VKP2045
	10	Screw	PMA30P050FMC		25	Housing ASSY(3P:yellow)	VKP2046
				NSP	26	Earth lead unit	XDF – 507
	11	FG base	VNL1645				
	12	Tilt cam	VNL1643				
	13	Tilt cam spring	VBH1243				
	14	Motor base	VNE1941				
	15	Spindle motor ASSY	VXA2125				



1.8 CARRIAGE ASSY

Mark	No.	Description	Parts No.
	1	CA gear (A)	VNL1638
	2	CA gear (B)	VNL1639
	3	Slider motor ASSY	VXX2082
	4	Motor holder	VNL1700
	5	Screw	PBZ20P050FMC
	6	
	7	Screw	PMZ20P030FMC



This parts is not service parts.

2. SCHEMATIC AND PCB CONNECTION DIAGRAMS

NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".
2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.
3. RESISTORS:
Unit: k: kΩ, M: MΩ, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. CAPACITORS:
Unit: p: pF or μF unless otherwise noted.
Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
Rated voltage: 50V except for electrolytic capacitors.
5. COILS:
Unit: m: mH or μH unless otherwise noted.
6. VOLTAGE AND CURRENT:
□ or ~ V :
DC voltage (V) in PLAY mode unless otherwise noted.
◇ mA or ~ mA :
DC current in PLAY mode unless otherwise noted.
Value in () is DC current in STOP mode.
7. OTHERS:
• ⊙ or ⊙ : Adjusting point.
• * : Measurement point.
• The Δ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. SCH-□ ON THE SCHEMATIC DIAGRAM:
• SCH-□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)
9. SWITCHES (Underline indicates switch position):
- FLKY ASSY
- S101 : 1
 - S102 : 2
 - S103 : 3
 - S104 : 4
 - S105 : 5
 - S106 : 6
 - S107 : 7
 - S108 : 8
 - S109 : 9
 - S110 : 0
 - S111 : LD
 - S112 : CD
 - S113 : □
 - S114 : K
 - S115 : X
 - S116 : >
 - S117 : □
 - S118 : CLEAR
 - S119 : D/A
 - S120 : PGM
 - S121 : +10
- PWSB ASSY
- S201 : POWER STANDBY/ON
 - S202 : NORMAL/AUTO STOP/AUTO OPEN
- LMSB ASSY
- S101 : SW1
 - S102 : SW2
 - S103 : SW3
- PKSB ASSY
- S104 : OUTER
 - S105 : INNER
- MOTHER ASSY
- S12 : RELAY PLAY ON-OFF

NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

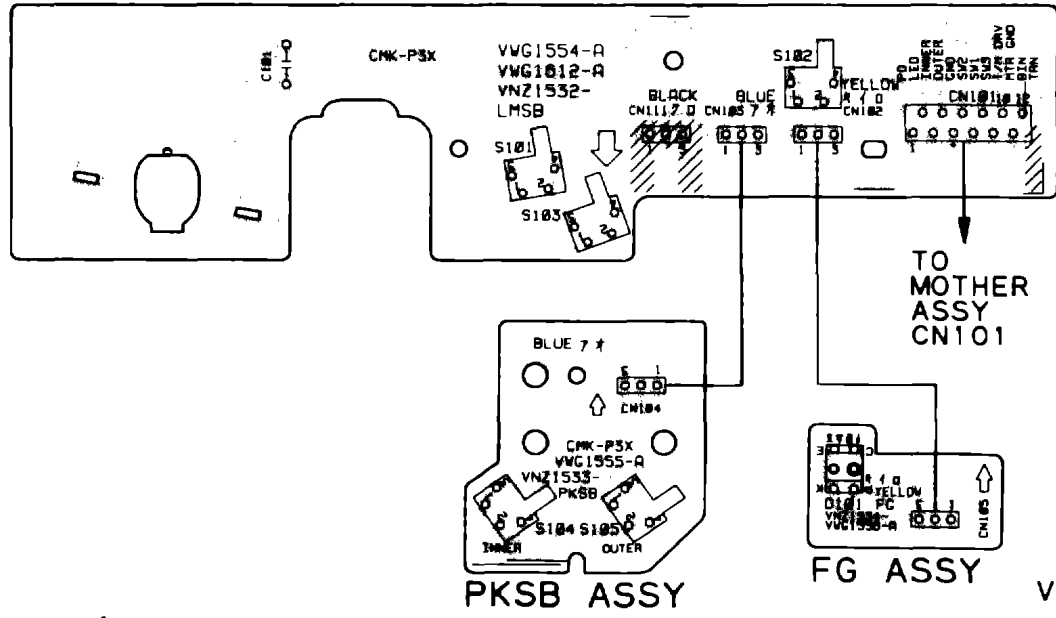
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destinations.
- For further information for respective destinations, be sure to check with the schematic diagram.

LMSB ASSY

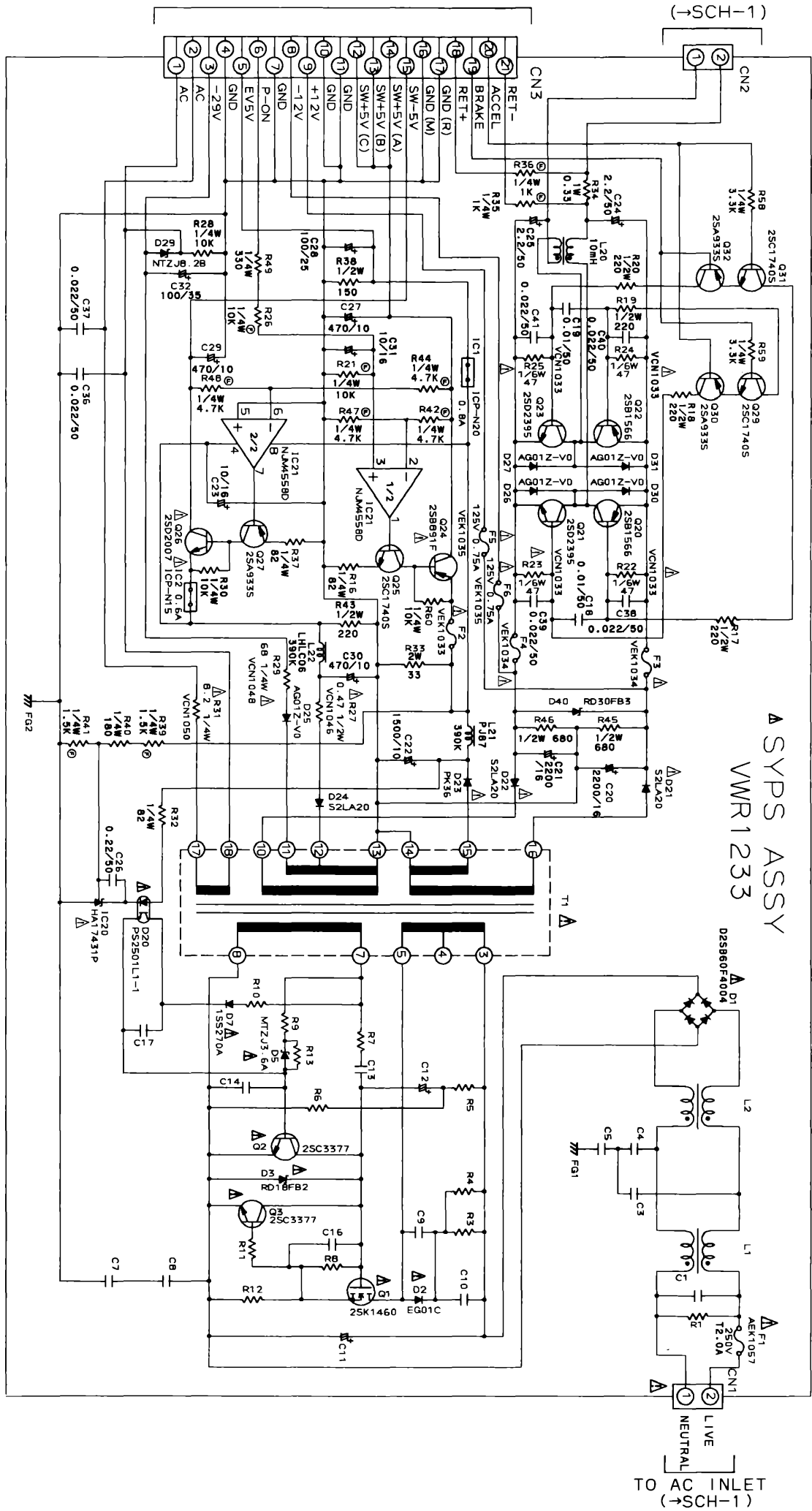
● This diagram is viewed from the mounted parts side.

PCB-1



VNP1479-E

TO MOTHER ASSY (2/2) CN102 (→SCH-5) TO SPDL MOTOR ASSY (→SCH-1)



< Caution on additional selection of the Δ -marked primary parts on the power board >

- During repair, those other than the specified parts cannot be used to prevent the occurrence of an accident.
- Mark Δ must be written in red on the board when the primary part of the power block is repaired.
- During part replacement, maintain the air clearance so that the replaced parts do not touch other parts.

NOTE FOR FUSE REPLACEMENT

CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.

SCH-2

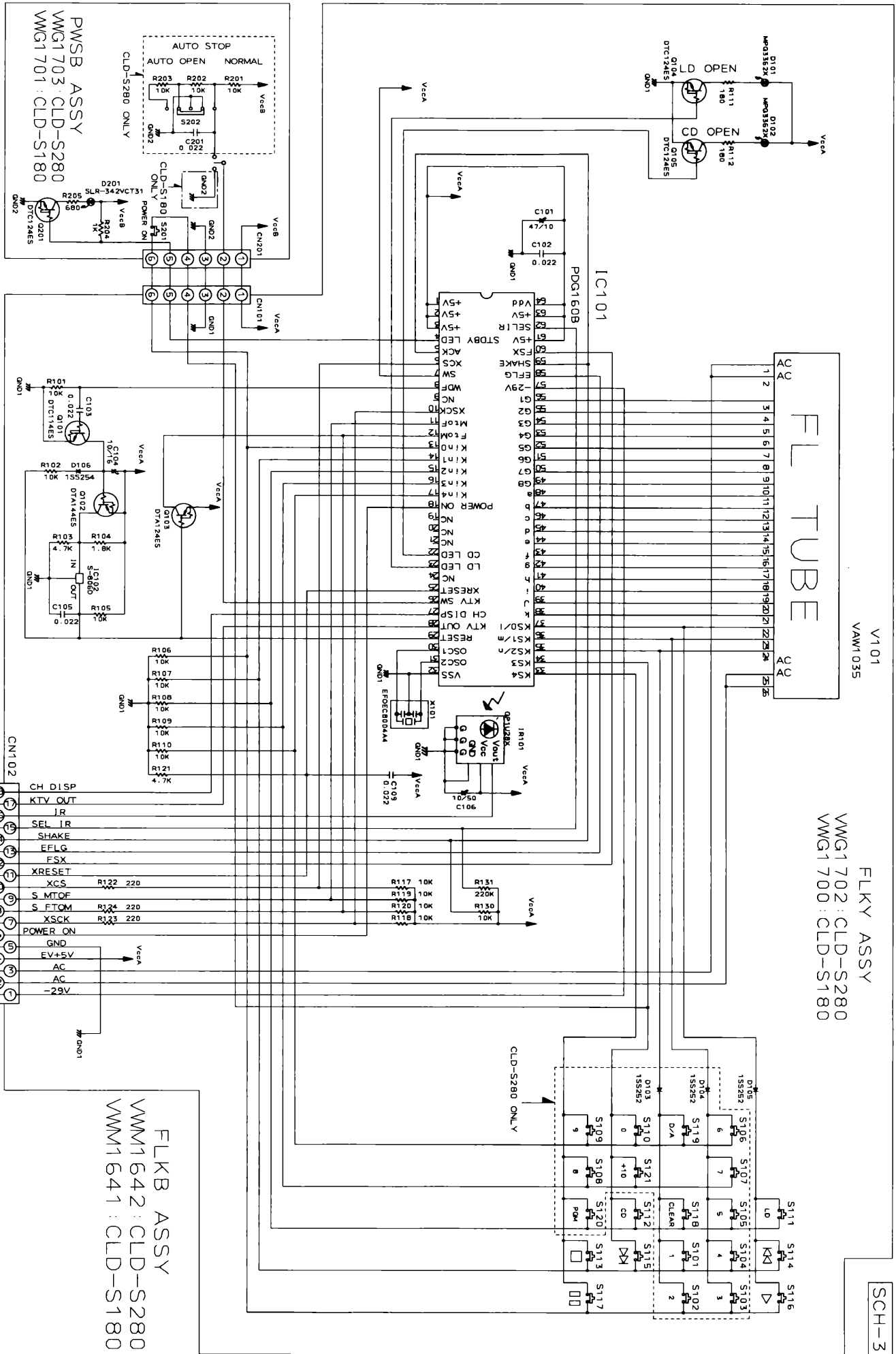
SYPS ASSY

CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. 1CP-N20, MFD BY ROHM CO., LTD. FOR IC1.

CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. 1CP-N15, MFD BY ROHM CO., LTD. FOR IC2.

SYPS ASSY

SCH-2



SCH-3

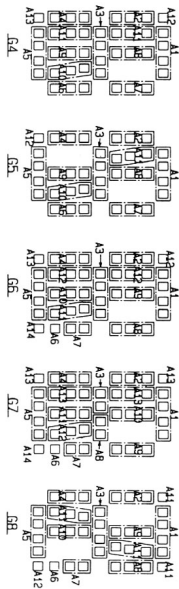
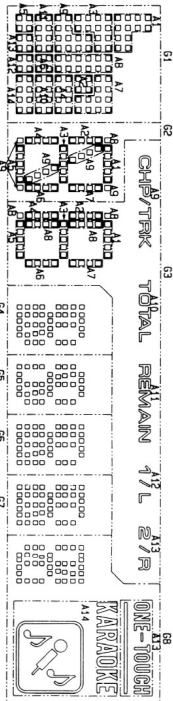
FLKY ASSY, PWSB ASSY

TO MOTHER ASSY (2/2) CN107 (-SCH-5)

FLKY ASSY, PWSB ASSY

SCH-3

● FL INFORMATION (V101, VAW1035)



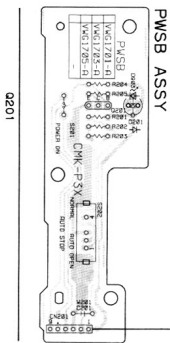
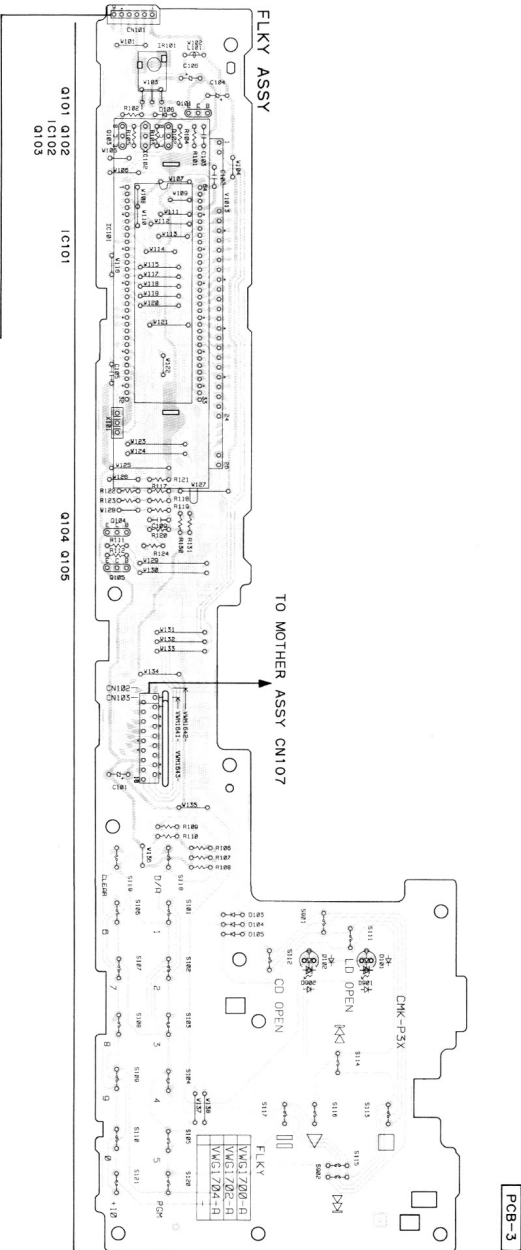
ANODE GRID ASSIGNMENT & PIN ASSIGNMENT							
C1	C2	C3	C4	C5	C6	C7	C8
P1 A1	A1	A1	A1	A1	A1	A1	A1
P2 A2	A2	A2	A2	A2	A2	A2	A2
P3 A3	A3	A3	A3	A3	A3	A3	A3
P4 A4	A4	A4	A4	A4	A4	A4	A4
P5 A5	A5	A5	A5	A5	A5	A5	A5
P6 A6	A6	A6	A6	A6	A6	A6	A6
P7 A7	A7	A7	A7	A7	A7	A7	A7
P8 A8	A8	A8	A8	A8	A8	A8	A8
P9 A9	A9	A9	A9	A9	A9	A9	A9
P10 A10	A10	A10	A10	A10	A10	A10	A10
P11 A11	A11	A11	A11	A11	A11	A11	A11
P12 A12	A12	A12	A12	A12	A12	A12	A12
P13 A13	A13	A13	A13	A13	A13	A13	A13
P14 A14	A14	A14	A14	A14	A14	A14	A14

PIN ASSIGNMENT																	
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Assignment	F	F	NP	NL	NL	NL	NL	G1	G2	G3	G4	G5	G6	G7	G8	P	P2
Pin No.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Assignment	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	NL	NP	F	F	F

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F:Flament G1-G8:Grid P1-P14:Anode NP:No pin NL:No Lead

● This diagram is viewed from the mounted parts side.

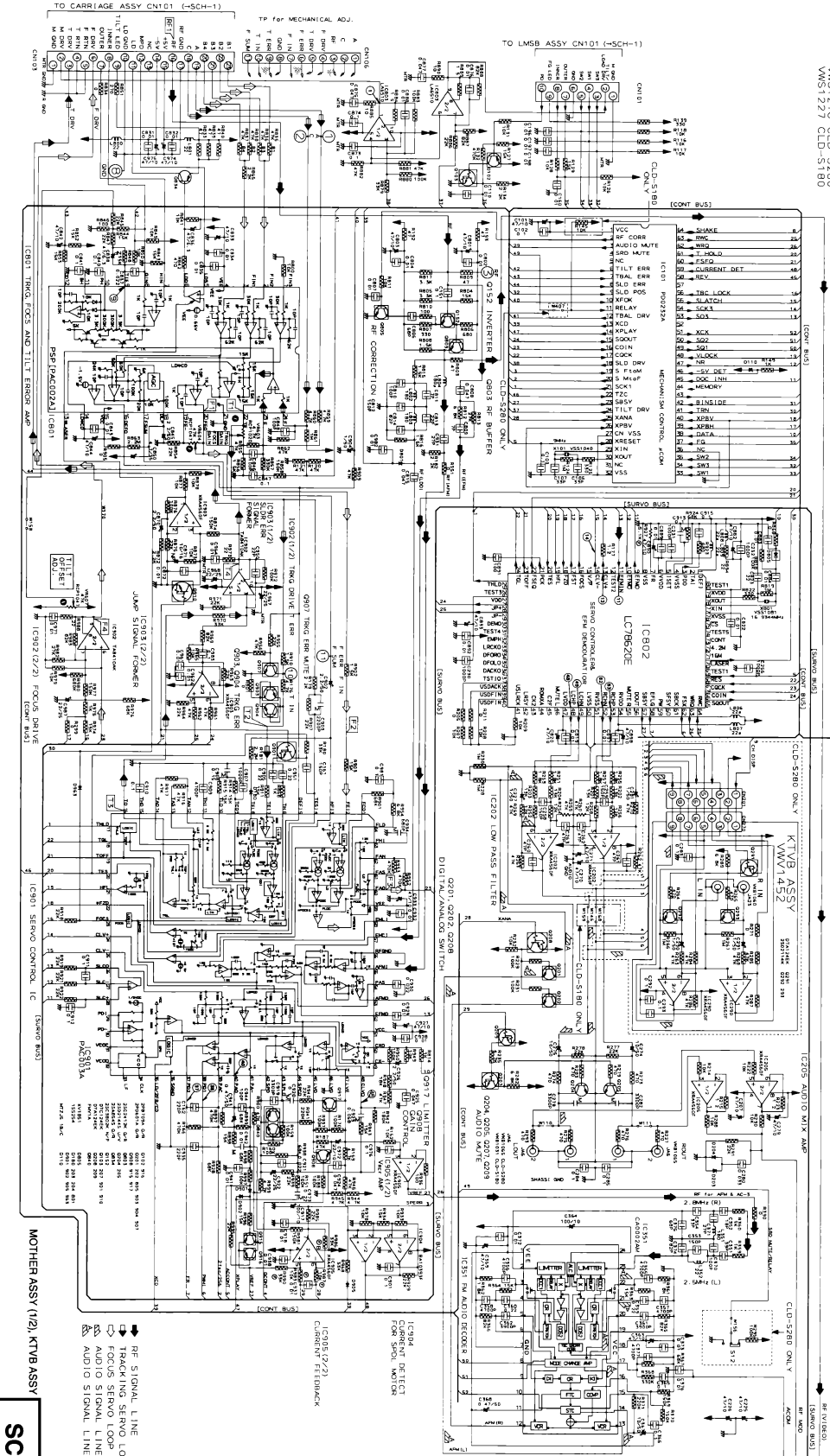


Q201

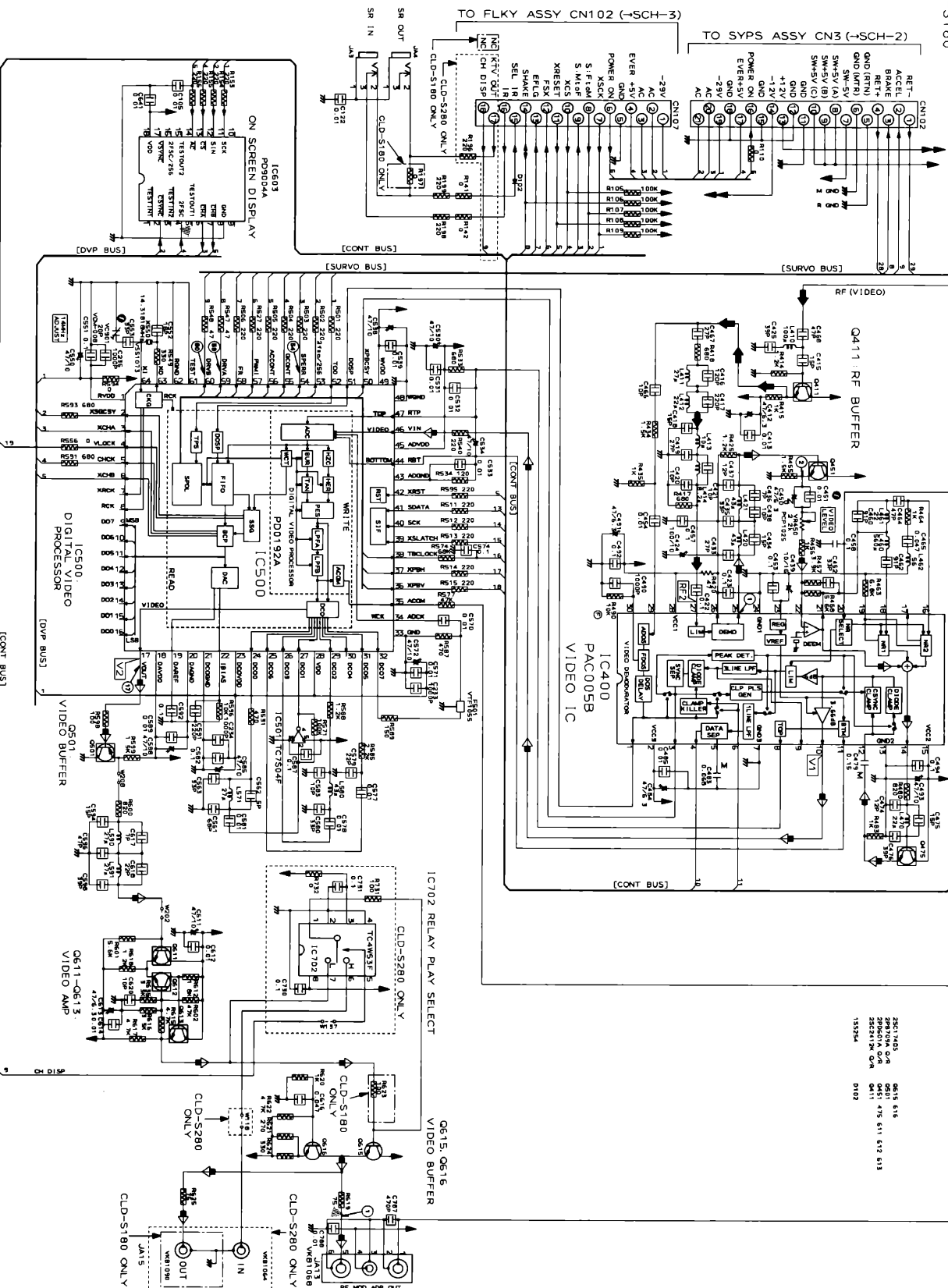
VNP1535-B

MOTHER ASSY (1/2)
WMS1218 CLD-S280
WMS1227 CLD-S180

MOTHER ASSY (1/2), KTVB ASSY



MOTHER ASSY (1/2), KTVB ASSY

MOTHER ASSY (2/2)
WVS1218 CLD-S280
WVS1227 CLD-S180[CONT BUS]
RF (VIDEO)
[SURVO BUS]
RF MOD
ACOM

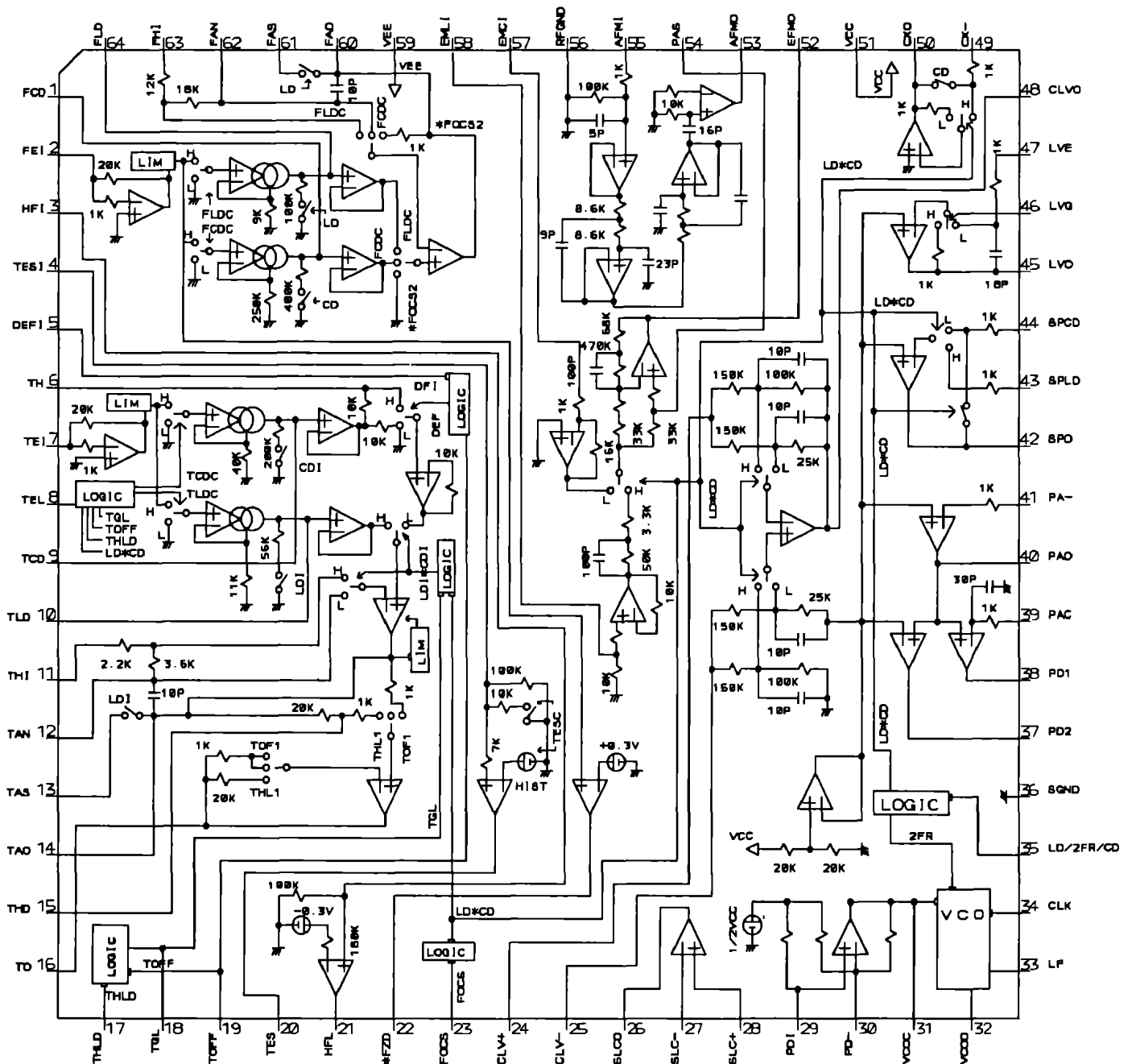
**WAVEFORMS AND VOLTAGE
MOTHER ASSEMBLY**

Note: (No) in the table correspond to the pin number.

Measurement condition: In case when (D.audio) is written, at time when disc that has digital audio recording is played.

IC801 (PAC002A) T1 5ms/div 200mVp-p 0V DC mode	IC802 (LC78620E) (11) 0.5μs/div 1.6Vp-p 0V DC mode	IC901 (PAC003A) T3 5ms/div 500mVp-p 0V DC mode	CN106 T4 5ms/div 5.8Vp-p 0V DC mode	IC400 (PAC005B) V1 10μs/div 1.6Vp-p 0V DC mode	IC500 (PD0192A) V2 10μs/div 1Vp-p 0V DC mode	
F1 5ms/div 100mVp-p 0V DC mode	(13) 50μs/div 5Vp-p 0V (14) 0V 0V DC mode	F3 5ms/div 1Vp-p 0V DC mode	(7) (F2) 5ms/div 200mVp-p 0V DC mode	RF2 2ms/div 400mVp-p AC mode	(54) 5ms/div 5Vp-p 0V DC mode	
(9) 10ms/div 0.2Vp-p 0V DC mode	(48), (53) 0.2μs/div 5Vp-p 0V (49), (52) 5Vp-p 0V DC mode	(38) 10μs/div 5Vp-p 0V (37) 0V 0V DC mode	F4 5ms/div 15Vp-p 0V DC mode	(1) 10μs/div 1Vp-p 0V DC mode	(60) 10μs/div 5Vp-p 0V (59) 0V 0V DC mode	
IC803 (LA6510) (1) 2ms/div 1.8Vp-p 0V DC mode		(40) 10ms/div 0.3Vp-p 0V DC mode	(10) 5ms/div 100mVp-p 0V DC mode	Q451 Emitter (2) 10μs/div 400mVp-p AC mode	CN103 RF1 2ms/div 600mVp-p AC mode	
		(48) 50μs/div 1Vp-p 0V DC mode	(11) 5ms/div 0.2Vp-p 0V DC mode	Video out (1) 10μs/div 1Vp-p (75Ω termination) 0V DC mode		
		IC902 (TA8410AK) T4 5ms/div 2Vp-p 0V DC mode				
		F4 5ms/div 5Vp-p 0V DC mode				

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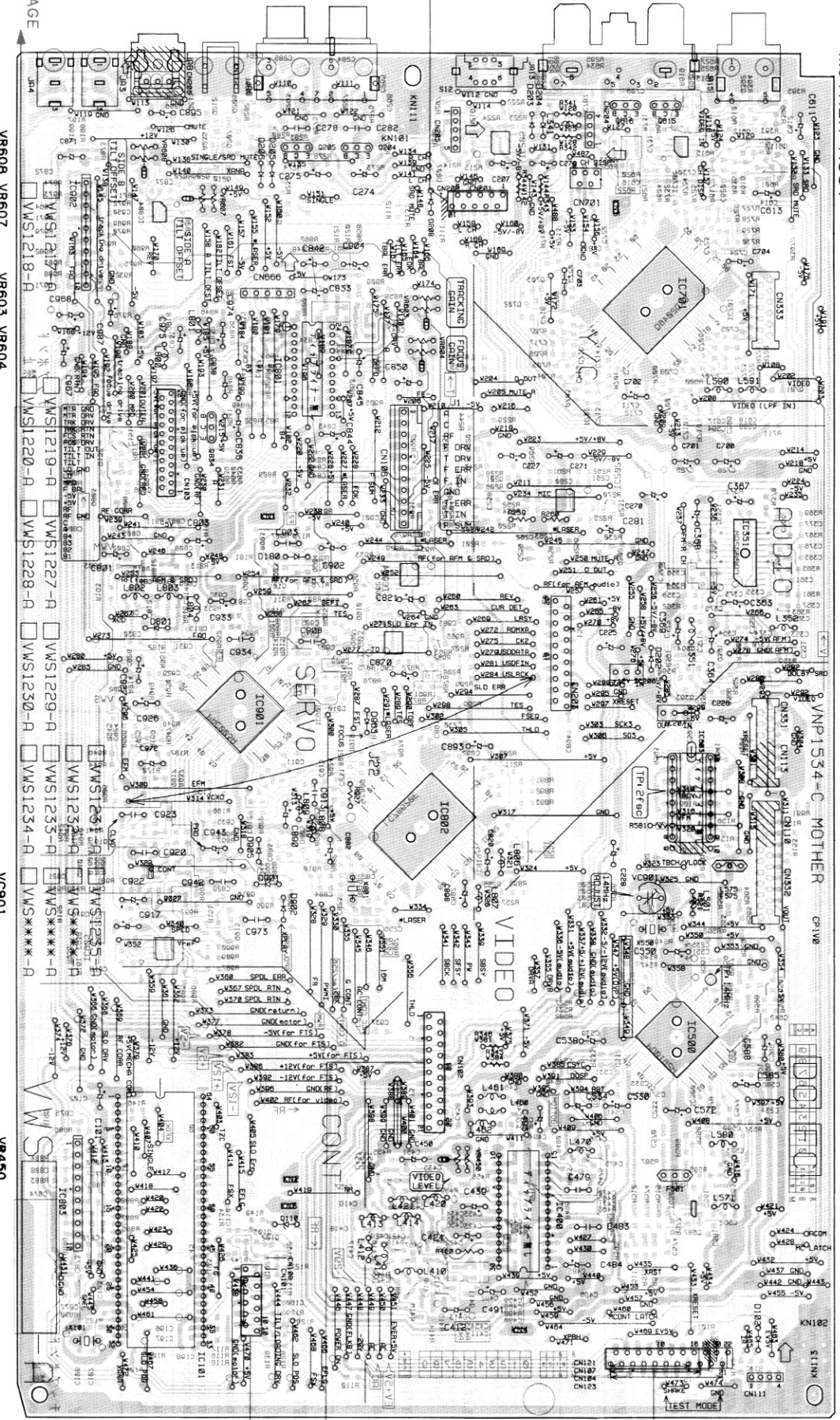
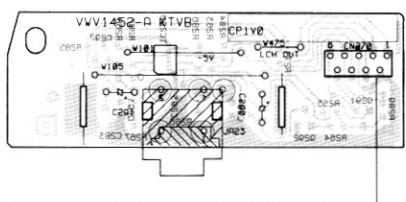


• This diagram is viewed from the mounted parts side.

KTVB ASSY

MOTHER ASSY

PCB-4



TO
CARRIAGE
ASSY
CN101

- | | | | | | | | | | | | | | | |
|-------------|-------------|------------|------------|-------------|-------|-------|-------|-------|-------|-------|------|------|------|-------|
| VR608 VR607 | VR603 VR604 | VC901 | VR450 | | | | | | | | | | | |
| SEED 0615 | SOT31 A0801 | EO70 T0731 | IC801 0834 | SOS31 T8C31 | A0831 | IC206 | IC207 | T1E0 | IC603 | 0480 | 81E0 | 81E0 | T020 | 00C31 |
| 81R0 0616 | SOT31 A0831 | SOT31 | 05S0 | T0S0 | SOS31 | 01E0 | 8E30 | S0831 | 20E31 | | | | | |
| 80S0 | T1R0 | 80S0 | 01S0 | 81E0 | 00T0 | S210 | TSS0 | 2080 | 40E0 | T0E31 | 80E0 | | | |
| T1S0 | S1R0 | 0204 | IC902 | | | | | | | | | | | |
| T1S0 | T0S0 | 0205 | | | | | | | | | | | | |

TO
FLKY
ASSY
CN102

TO
SYPS
ASSY
CN3

TO
LMSB
ASSY
CN101

D

C

B

A

3. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560 Ω → 56 × 10¹ → 561 RD1/8PM561J

47k Ω → 47 × 10³ → 473 RD1/4PS473J

0.5 Ω → 0R5 RN2H0R5K

1 Ω → 010 RS1P010K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 RN1/4PC5621F

• LIST OF WHOLE PCB ASSEMBLIES

Mark	Symbol & Description	Part No.		Remarks
		CLD-S280/TD, TD/CN, TL	CLD-S180/TD	
NSP	MACBASSY	VWM1507	VWM1507	
NSP	└ LMSBASSY	VWG1554	VWG1554	
NSP	└ PKSBASSY	VWG1555	VWG1555	
NSP	└ FGASSY	VWG1556	VWG1556	
NSP	FLKBASSY	VWM1642	VWM1641	
	└ FLKY ASSY	VWG1702	VWG1700	
	└ PWSBASSY	VWG1703	VWG1701	
Δ	SYPSASSY	VWR1233	VWR1233	
NSP	MOTHERASSY	VWM1631	Not used	
	└ MOTHERASSY	VWS1218	VWS1227	
	└ KTVBASSY	VWV1452	Not used	

• CONTRAST OF PCB ASSEMBLIES

FLKY ASSY

VWG1702 and VWG1700 have the same construction except for the following:

Mark	Symbol & Description	Part No.	
		VWG1702	VWG1700
	D103 – D104	1SS252	Not used
	S101 – S110, S118 – S121	RSG1034	Not used

PWSB ASSY

VWG1703 and VWG1701 have the same construction except for the following:

Mark	Symbol & Description	Part No.	
		VWG1703	VWG1701
	C201	CKPUYF223Z25	Not used
	R201 – R203	RD1/6PM103J	Not used
	S202	VSH1014	Not used

MOTHER ASSY

VWS1218 and VWS1227 have the same construction except for the following:

Mark	Symbol & Description	Part No.	
		VWS1218	VWS1227
	C730, C731	CKSQYF104Z25	Not used
	C207, C271	CEAL470M10	CEAS470M10
	CN201	52045 – 0945	Not used
	IC702	TC4W53F	Not used
	JA15	VKB1064	VKB1090
	R145	Not used	RS1/10S103J
	R196	RS1/10S221J	Not used
	R197	Not used	RS1/10S000J
	R295	RS1/10S104J	Not used
	R623	Not used	RS1/10S101J
	R731	RS1/10S101J	Not used
	R732	RS1/10S000J	Not used
	S12	VSH1009	Not used

● PARTS LIST FOR CLD-S280/TD

Mark No.	Description	Parts No.
MACB ASSY		
OTHERS		
	PC Board	VNP1479
LMSB ASSY		
SWITCHES AND RELAYS		
	S101 – S103	DSG1017
OTHERS		
CN101	10P FCC Connector	52044 – 1045
PKSB ASSY		
SWITCHES AND RELAYS		
	S104, S105	DSG1017
FG ASSY		
SEMICONDUCTORS		
	D101	GP1S24
FLKB ASSY		
OTHERS		
	PC Board	VNP1535
FLKY ASSY		
SEMICONDUCTORS		
	IC101	PDG160B
	IC102	S – 806D
	Q103	DTA124ES
	Q102	DTA144ES
	Q101	DTC114ES
	Q104, Q105	DTC124ES
	D103 – D105	1SS252
	D106	1SS254
	D101, D102	MPG3362X
SWITCHES AND RELAYS		
	S101 – S110, S118 – S121	RSG1034
	S111 – S117	VSG1008
CAPACITORS		
	C104	CEAL100M16
	C106	CEAS100M50
	C101	CEAS470M10
	C102, C103, C105, C109	CKPUYF223Z25
RESISTORS		
	All Resistors	RD1/6PM□□□J
OTHERS		
CN101	FJ Connector 6P	06R – FJ
CN102	FFC Bottom connector 18P	52492 – 1820
X101	Ceramic resonator	EFOEC8004A4
	Remote receiver unit	GP1U28X
V101	FL Tube	VAW1035
	Spacer	VEC1599
	FL Holder(FE)	VNF1085

Mark No.	Description	Parts No.
PWSB ASSY		
SEMICONDUCTORS		
	Q201	DTC124ES
	D201	SLR – 342VCT31
SWITCHES AND RELAYS		
	S201	VSG1008
	S202	VSH1014
CAPACITORS		
	C201	CKPUYF223Z25
RESISTORS		
	All Resistors	RD1/6PM□□□J
OTHERS		
CN201	FJ Connector 6P	06P – FJ
SYPS ASSY		
SEMICONDUCTORS		
△	IC20	HA17431P
△	IC2	ICP – N15
△	IC1	ICP – N20
	IC21	NJM4558D
	Q27, Q30, Q32	2SA933S
	Q20, Q22	2SB1566
△	Q24	2SB891F
	Q25, Q29, Q31	2SC1740S
△	Q2, Q3	2SC3377
△	Q26	2SD2007
	Q21, Q23	2SD2395
△	Q1	2SK1460
△	D7	1SS270A
	D25 – D27, D30, D31	AG01Z – VO
△	D1	D2SB60F4004
	D2	EG01C
△	D5	MTZJ3.6A
	D29	MTZJ8.2B
△	D20	PS2501LI – 1M
△	D3	RD18FB2
	D40	RD30FB3
△	D23	RK36
△	D21, D22, D24	S2LA20
RESISTORS		
△	R22 – R25 (47Ω, 1/6W)	VCN1033
△	R27 (0.47Ω, 1/2W)	VCN1046
△	R29 (68Ω, 1/4W)	VCN1048
△	R31 (8.2Ω, 1/4W)	VCN1050
OTHERS		
△	F1 FUSE(T2A)	AEK1057
△	F2 FUSE	VEK1033
△	F3, F4 FUSE	VEK1034
△	F5, F6 FUSE	VEK1035
MOTHER ASSY		
OTHERS		
	PC Board	VNP1534

Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
MOTHER ASSY					
SEMICONDUCTORS					
IC904		BA10393F	C352, C552		CCSQCH180J50
IC351		CA0002AM	C579, C618, C813, C823, C950		CCSQCH220J50
IC803		LA6510	C162, C417, C591, C935		CCSQCH221J50
IC802		LC78620E	C371, C419, C433, C467, C931		CCSQCH270J50
IC801		PAC002A	C106, C107, C354, C435, C452		CCSQCH330J50
IC901		PAC003A	C553, C563, C580		CCSQCH330J50
IC400		PAC005B	C351, C425, C476, C598		CCSQCH390J50
IC500		PD0192A	C260 – C263, C464, C468, C596		CCSQCH470J50
IC101		PD0232A	C787		CCSQCH471J50
IC603		PD9004A	C375, C561, C806		CCSQCH680J50
IC902		TA8410AK	C374, C814		CCSQCH820J50
IC702		TC4W53F	C460, C462		CCSQCH910J50
IC501		TC7S04F	C439		CEAL100M16
IC202, IC205, IC903, IC905		XRA4560F	C207, C271		CEAL470M10
Q102, Q501, Q916		2PB709A	C412, C484, C491, C613, C836		CEAL470M6R3
Q201, Q202, Q451, Q475		2PD601A	C838		CEALNP470M6R3
Q611 – Q613, Q805, Q903, Q904		2PD601A	C871		CEANP100M16
Q907, Q908, Q915, Q917		2PD601A	C972		CEANP220M10
Q834		2SA854S	C450		CEANP470M6R3
Q615, Q616		2SC1740S	C227, C281, C904		CEAS010M50
Q411, Q803		2SC2412K	C274, C275, C367		CEAS100M50
Q152		2SC3802K	C364, C424, C917		CEAS101M10
Q204, Q205		2SD2144S	C922, C967, C968, C987		CEAS220M25
Q208, Q209		DTA124EK	C845, C870, C902, C926		CEAS2R2M50
Q103, Q207, Q901, Q910		DTC124EK	C101, C225, C226		CEAS470M10
Q840		FMY1A	C270, C279, C363, C369		CEAS470M10
D102, D180, D203, D204, D801		1SS254	C493, C530, C534, C538, C550		CEAS470M10
D901, D902, D905, D963		1SS254	C572, C585, C588, C611, C801		CEAS470M10
D805		KV1851	C803, C820, C833, C842, C844		CEAS470M10
D110		MTZJ5.1B	C882, C890, C893, C898, C927		CEAS470M10
COILS AND FILTERS			C933, C974, C975		CEAS470M10
L413		LAU100J	C368, C943		CEASR47M50
L410		LAU101J	C850		CEJA4R7M35
L351, L802 – L804		LAU181J	C230 – C235, C256, C490, C907		CKSQYB102K50
L352, L412, L461, L470		LAU220J	C919		CKSQYB332K50
L800, L801, L806 – L809		LAU220J	C361, C362		CKSQYB392K50
L411, L571, L590, L591		LAU270J	C355 – C358, C377, C909		CKSQYB472K50
L420, L421, L580		LAU430J	C105, C110, C122, C160		CKSQYF103Z50
L462		LAU560J	C196 – C198, C372, C373, C376		CKSQYF103Z50
L414		LAU8R2J	C413, C451, C454, C485		CKSQYF103Z50
L460		LFA561J	C531 – C533, C539, C570, C571		CKSQYF103Z50
F501		VTF1055	C577, C578, C581, C589, C612		CKSQYF103Z50
SWITCHES AND RELAYS			C614, C641, C788, C802, C804		CKSQYF103Z50
S12		VSH1009	C807, C819, C822, C831, C832		CKSQYF103Z50
CAPACITORS			C834, C835, C843, C872, C876		CKSQYF103Z50
C562		CCSQCH050C50	C883, C884, C888, C889, C892		CKSQYF103Z50
C436, C617, C809, C811		CCSQCH070D50	C897, C918, C928, C929, C932		CKSQYF103Z50
C420, C421, C438, C466, C583		CCSQCH100D50	C937, C938, C941, C961, C962		CKSQYF103Z50
C620		CCSQCH100D50	C964, C971, C982		CKSQYF103Z50
C370, C810, C846, C848, C891		CCSQCH101J50	C102, C103, C151, C284, C285		CKSQYF104Z25
C944		CCSQCH101J50	C365, C366, C422, C423, C453		CKSQYF104Z25
C437, C474		CCSQCH120J50	C457, C458, C492, C494, C551		CKSQYF104Z25
C416		CCSQCH121J50	C574, C582, C587, C592		CKSQYF104Z25
C415, C418, C434, C475, C594		CCSQCH150J50	C730, C731, C840, C841, C847		CKSQYF104Z25
C161, C258, C259, C353, C812		CCSQCH151J50	C873, C874, C901, C910 – C912		CKSQYF104Z25

Mark No.	Description	Parts No.
C915, C976, C981, C983		CKSQYF104Z25
C837, C921, C930		CKSQYF223Z50
C359, C360, C905, C951		CKSQYF224Z25
C280		CKSQYF333Z50
C465, C616, C808, C815, C875		CKSQYF473Z25
C877, C924, C925		CKSQYF473Z25
C942		CQMA103J50
C913, C920		CQMA104J50
C479, C908		CQMA154J50
C903		CQMA222J50
C973		CQMA224J50
C278, C282		CQMA332J50
C934		CQMA681J50
C483, C923		CQMA683J50
VC901		VCN – 008

RESISTORS

R420		RD1/6PM470J
R259, R260		RD1/6PM473J
R490, R987, R989		RN1/10SE103D
R986, R990		RN1/10SE333D
R261, R262		RN1/10SE473D
R927		RN1/6PQ5101F
VR450 (2.2KΩ, 0.1W)		PCP1025
VR603 (4.7KΩ, 0.1W)		RCP1020
VR604, VR607 (47KΩ, 0.1W)		RCP1047

Other Resistors RS1/10S□□□J

OTHERS

CN201	9P FCC Connector	52045 – 0945
CN101	10P FCC Connector	52045 – 1045
CN107	18P FCC Connector	52045 – 1845
CN102	21P FCC Connector	52045 – 2145
CN103	23P FCC Connector	52233 – 2310
CN106	11P Top post	B11P – SHF – 1AA
JA3, JA4	Remote control jack	RKN1004
	PCB Binder	VEF1040
JA15	2P Pin jack	VKB1064
JA6	4P Pin jack	VKB1065
JA13	RF Pin jack	VKB1068
	Screw terminal	VNE1948
KN101, KN102	Earth metal fitting	VNF1084
X101	Ceramic resonator (9MHz)	VSS1040
X550	Crystal resonator (14.31818MHz)	VSS1073
X801	Crystal resonator (16MHz)	VSS1081

KTVB ASSY

SEMICONDUCTORS

IC290		XRA4560F
Q292, Q293		2SD2114K
Q291		DTA124EK

CAPACITORS

C290, C291		CEA5010M50
C283, C292, C293		CKSQYF104Z25

RESISTORS

All Resistors RS1/10S□□□J

OTHERS

CN270	9P FCC Connector	52045 – 0945
JA23	Jack	VKB1060
	Pin jack holder	VNE2043

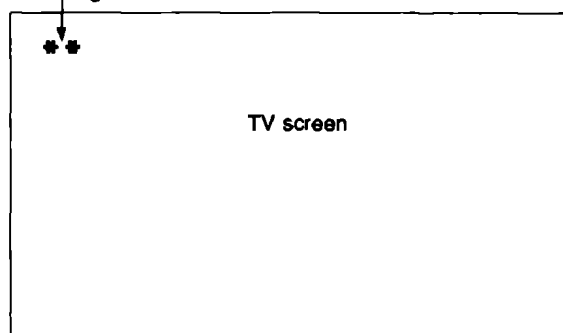
4. SELF-DIAGNOSTIC FUNCTIONS

4.1 SELF-DIAGNOSTIC FUNCTIONS

The self-diagnostic functions automatically display an error code on the TV screen and front panel fluorescent display section when there is an error. The customer checks the error code and conveys it to the service personnel to make repairs more efficient.

After an error occurs, even if the error code goes off, you can display the error code again by holding down the CLEAR key for 10 seconds (except a loading error **L*** display). However, if the power cord is unplugged, the error code information is lost.

Self-diagnostic error code



This table explains the information for analyzing the cause when an error occurs with the CLD player.

Self-diagnostic error code	Contents	Conditions	Probable cause
H0	Spindle overcurrent detection error.	In the play state, overcurrent was detected in the spindle motor. Monitoring starts 5 seconds after the start of play or special playback mode, this error is detected if the overcurrent port is "L" for 4 seconds.	<ul style="list-style-type: none"> Motor NG Clamper rubbing
U0	FG abnormality error	<ul style="list-style-type: none"> ① At LD startup, the rate of rotation calculated from the FG was less than 15 rpm for 5 consecutive seconds from the spindle Run command. ② At CD startup, there was less than 1/8th rotation even after 5 seconds had passed since the end of acceleration. ③ During play search, CD : subcodes are being read/LD : Phillips codes are being read and the spindle is locked, but a state in which the rate of rotation calculated from the FG was less than 15 rpm continued for 5 seconds or more. In the above case, it is judged that an abnormality has occurred in the FG sensor and that accurate rotation rate calculation has become impossible. 	<ul style="list-style-type: none"> FG sensor abnormality, FG signal not coming to mechanism controller FG sensor clogged Rubbing between FG sensor and slit Turntable dropped FG slit deposition NG
H1	Partial short error	<ul style="list-style-type: none"> ① At LD startup, the speed did not reach 1200 rpm within a certain time (12 seconds) after the spindle Run command. ② At CD startup, a certain speed (313 rpm) was not reached within 6 seconds from the end of spindle acceleration. 	<ul style="list-style-type: none"> Spindle motor NG Commutator NG Bearing too tight Power supply NG
H2	Power supply abnormality error	<ul style="list-style-type: none"> -5 V power supply abnormality detected. The power supply abnormality port is constantly monitored and if its signal stays high for about 1 second consecutively, the power supply is judged to be abnormal. 	<ul style="list-style-type: none"> -5V not fed from SYPS assy Parts shorted
L*	Loading error	<ul style="list-style-type: none"> ① When loading operation goes over time (approx. 10 sec.). ② When assist at disc sense entry ends and is not tilt neutral. ③ When assist at set up entry ends and is not tilt neutral. 	<ul style="list-style-type: none"> Tilt switch 1,2,3 abnormal, so tilt/loading state not read in correctly. tilt/loading mechanism mechanically locked Drive IC NG Power supply NG

Self-diagnostic error code	Contents	Conditions	Probable cause
E*	Slider error	During slider movement, a time overrun occurred (track count search 20 seconds, mandatory movement 10 seconds).	<ul style="list-style-type: none"> Slider ceased being able to run The slider mechanism is mechanically locked and can no longer move to its target. Slider position switch NG Flexible cable pulled out Drive IC NG Power supply abnormal
U1	Misclamp error	<ol style="list-style-type: none"> During LD setup, after 1/8th rotation, the track count during 1/8 rotation exceeded 511. During startup, the focus was lost once and refocusing was attempted, but the focus could not be locked. When the spindle motor rotation is stopped once before CDV A←→V area change, but stop is not carried out within 2.0 seconds, it is determined that there are two discs on each other and clamp error is set. Two FG pulses did not come within 800 ms from the start of LD startup. During CD startup, it took more than 860 ms to reach 416 rpm (CD+LD both mounted detected). The disc clamp operation did not end within 5 seconds. 	<ul style="list-style-type: none"> Disc sandwiched Disc Shifted Spindle motor NG Disc scratched or dirty defocused during start up Two discs loaded PU actuator NG Tilt sensor NG Tilt neutral NG (tilt base NG)
P*	Spindle error	<ol style="list-style-type: none"> During TOC reading with an LD, the spindle servo was not locked within 60 seconds from the start of the spindle run. When CAV/CLV determination is not finished within 60 seconds from spindle servo lock. The codes could not be read for 10–15 seconds consecutively for an LD or 7–10 seconds for a CD/CDV and the spindle servo was not locked. The speed exceeded 2100 rpm during LD startup. 	<p>P0 : PH code, sub-Q code can not be read</p> <ul style="list-style-type: none"> VCO, PLL Offset out of adjustment Disc defect <p>P5 : PAL disc, mirror disc, etc. PLAY</p> <ul style="list-style-type: none"> No RF <p>P6 : Spindle servo does not lock</p> <ul style="list-style-type: none"> Spindle motor NG
F*	Focus error	<ol style="list-style-type: none"> In the "no disc" state, a setup command was received from the mode controller. When LD is out of focus when slider is moved to starting position during set up. In case of CD/CDV is NG even after three focus tries. During startup, the maximum slider servo duty continued for 3 loops or more. 	<p>F5 : CD, LD on top of each other</p> <ul style="list-style-type: none"> LD scratched or dirty defocused during slider movement Disc NG Slider position switch NG <p>F6 : Inner edge of disc scratched or dirty</p> <ul style="list-style-type: none"> Slider ran into inner edge mechanical stopper

* Besides the above errors, there is the "U2" communications error (the mode controller could not communicate normally with the mechanism controller).

The probable cause is a defective mechanism controller, disconnected cable, etc.

Mechanism mode contents (meaning of * for L* etc.)

0 : Play 1 : Open 2 : Standby 3 : Clamp 4 : Disc sense
5 : Setup (rotation start) 6 : TOC read 7 : Play 8 : Search F : Recovery mode

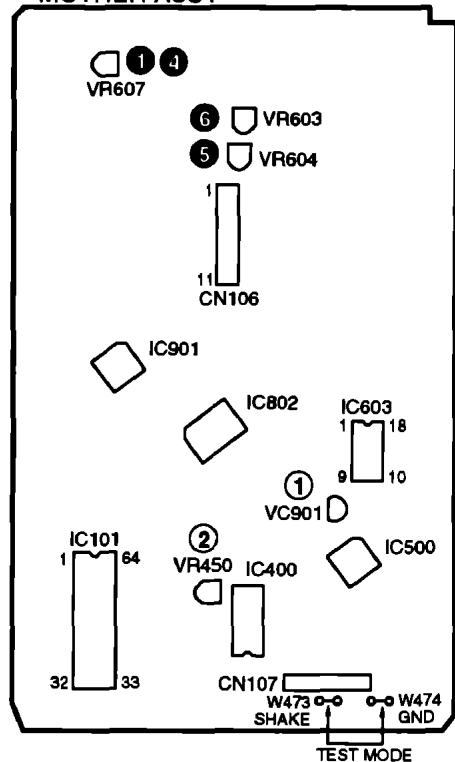
* 0 : Normal playing
7 : Moving to play operation

5. ADJUSTMENTS (調整方法)

1. ADJUSTMENT ITEMS AND LOCATION (調整項目と調整位置)

■ Adjustment Points (PCB Part)

MOTHER ASSY



■ Adjustment Items

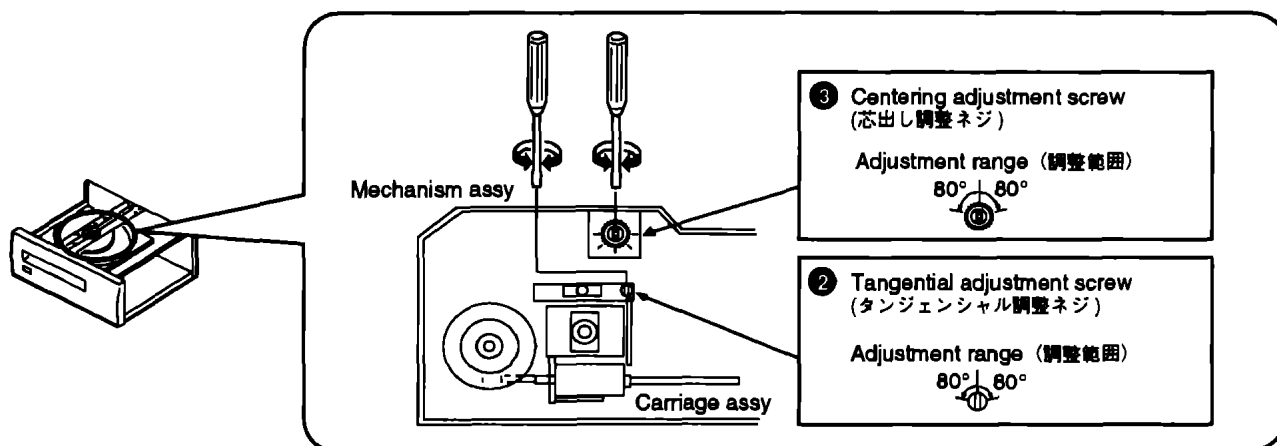
[Mechanical Part]

- ① Tilt Offset Adjustment
(チルトオフセット調整)
- ② Tangential Direction Angle Adjustment
(タンジェンシャル傾き調整)
- ③ Spindle Motor Centering Adjustment
(スピンドル芯出し調整)
- ④ Crosstalk Check and Fine Tilt Offset Adjustment
(クロストーク確認及び、チルトオフセット調整)
- ⑤ Focus Servo Loop Gain Adjustment
(フォーカスサーボループゲイン調整)
- ⑥ Tracking Servo Loop Gain Adjustment
(トラッキングサーボループゲイン調整)
- ⑦ RF Level Check
(RFレベル確認)






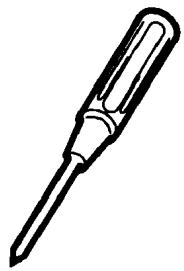

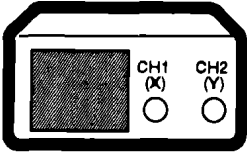

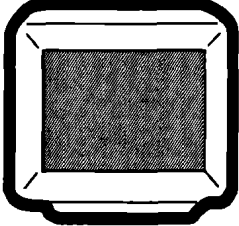
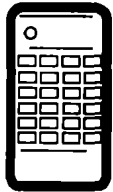
[Electrical Part]

- ① Master Clock Adjustment
(マスタークロック調整)
- ② Output Video Level Adjustment
(出力ビデオレベル調整)

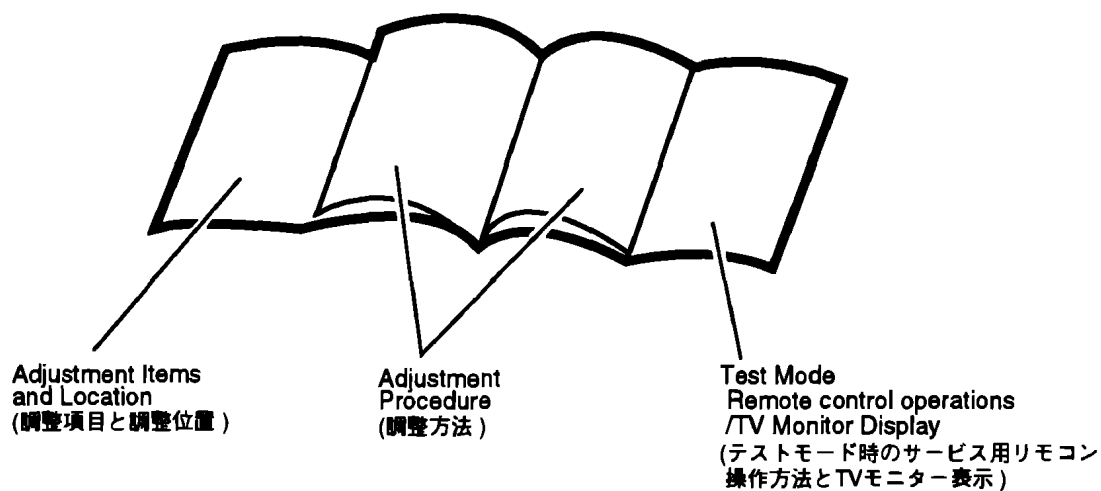
■ Adjustment Points (Mechanism Part)



2. JIGS AND MEASURING INSTRUMENTS (調整に必要な治工具類)

			
CD test disc (YEDS-7)	LD test disc (GGV1012)	⊖ Screwdriver (medium)	⊖ Screwdriver (small)
			
⊖ Precise screwdriver	⊕ Screwdriver (large)	⊕ Screwdriver (medium)	Dual-trace oscilloscope (with delay) Frequency band $\geq 40\text{MHz}$
			
Frequency counter Display digit $\geq 8\text{-digit}$	TV monitor	Test mode remote control unit (GGF1067)	

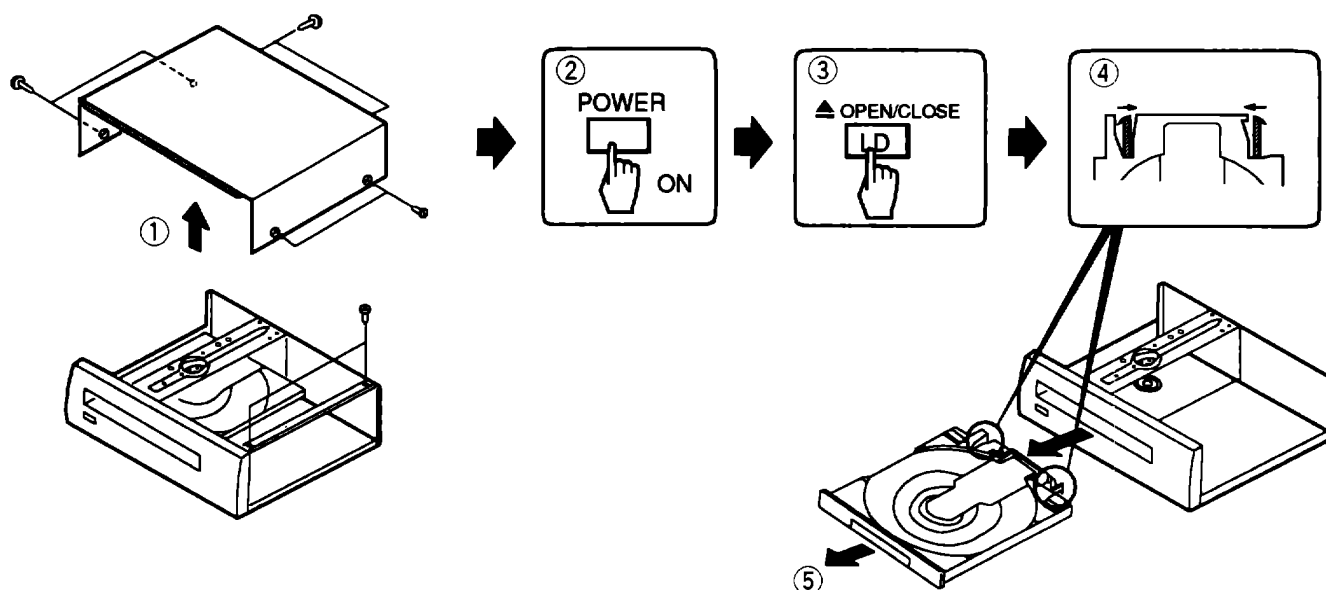
- Use this manual as follows:
(このマニュアルの使い方)



3. DISASSEMBLY/ASSEMBLY (分解/組立の手順)

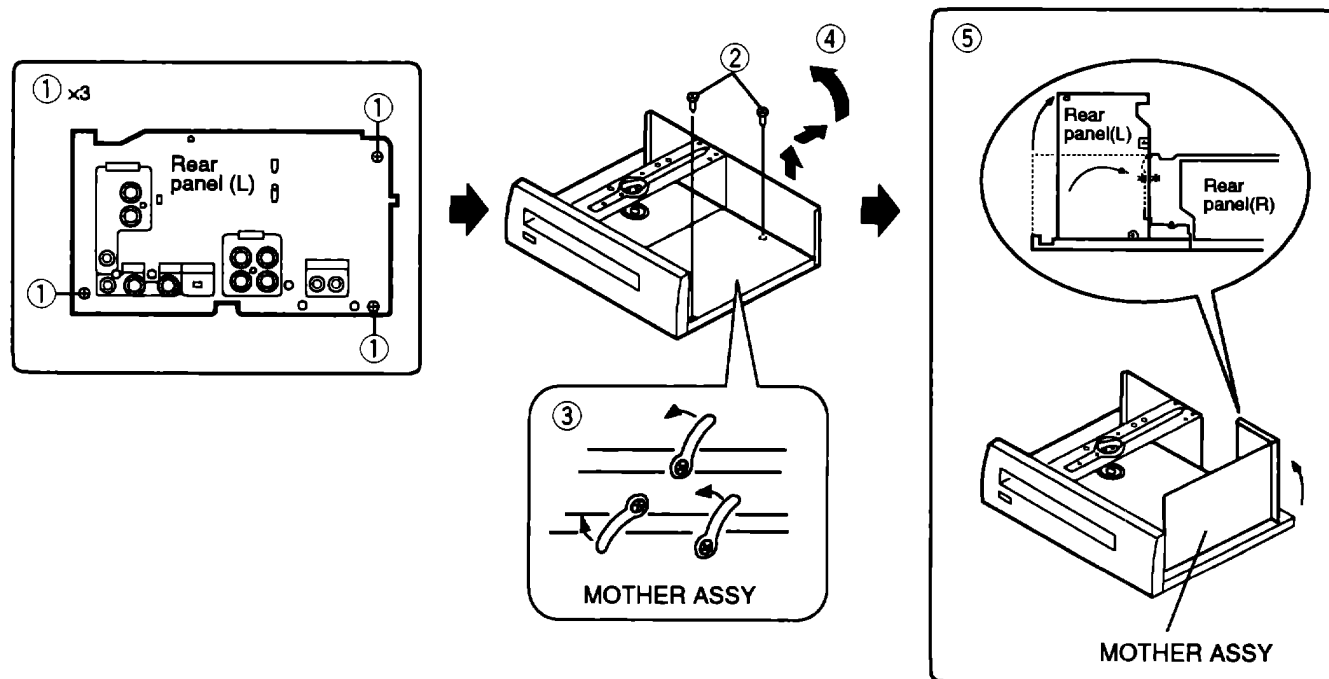
(1) Disc Tray

- Disassembly : ①→②→③→④→⑤
- Assembly : ⑤→①



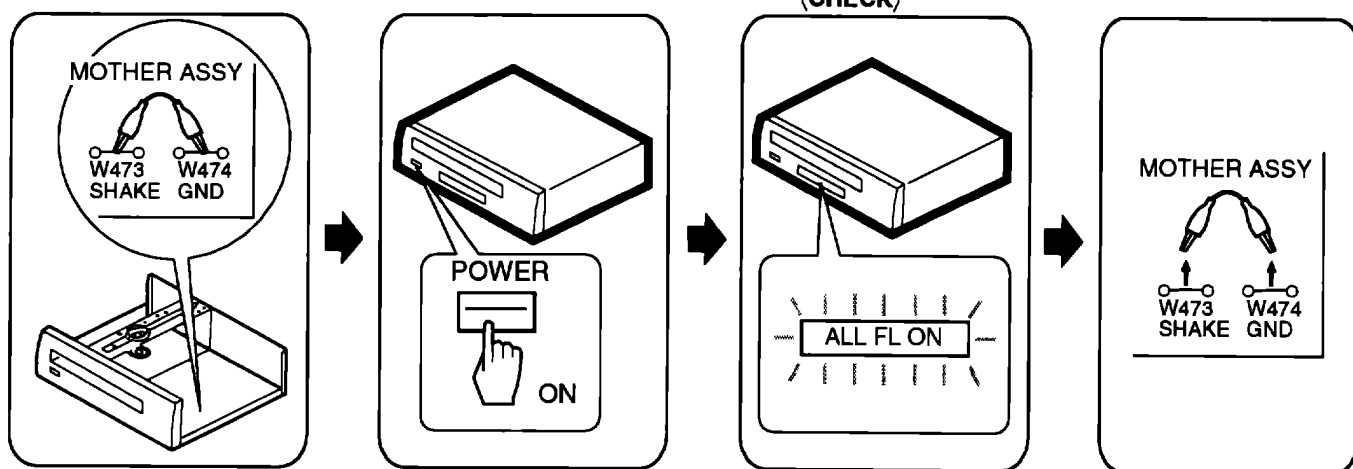
(2) MOTHER ASSY

- Disassembly : ①→②→③→④→⑤
- Assembly : ⑤→④→③→②→①

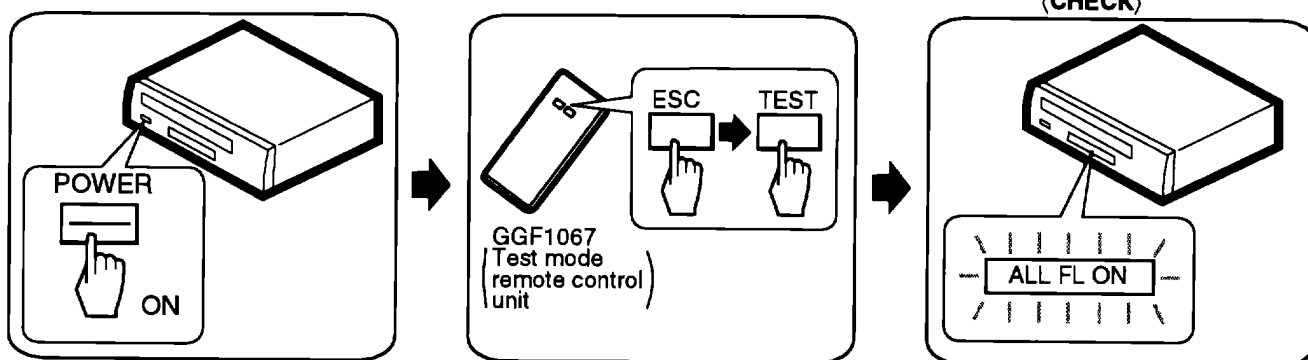


4. TEST MODE (テストモード)

TEST MODE: ON

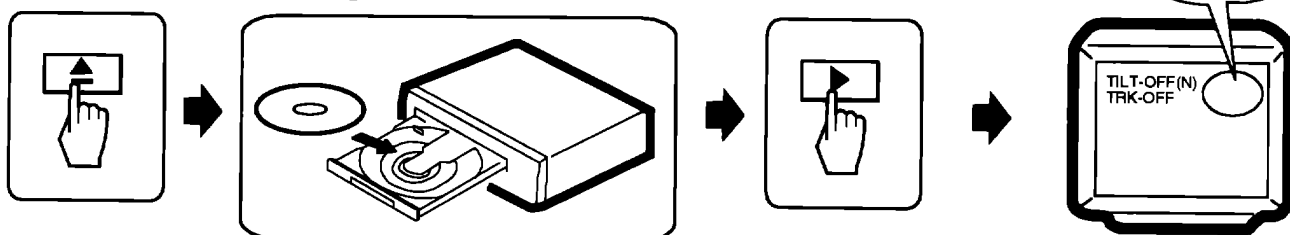


OR

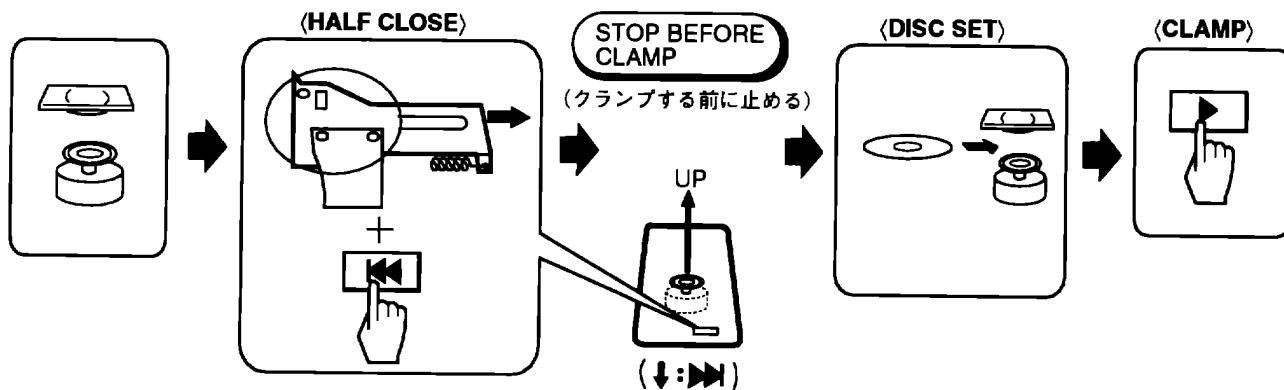


TEST MODE: DISC SET

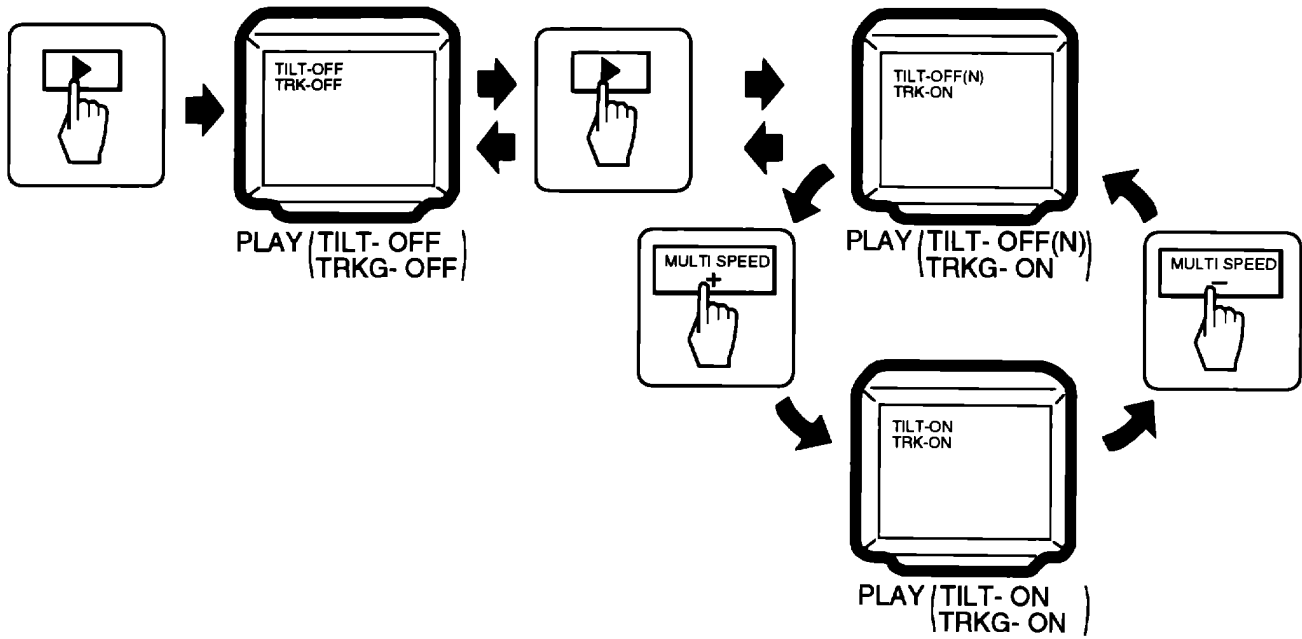
• With TRAY (トレイ有りの場合)



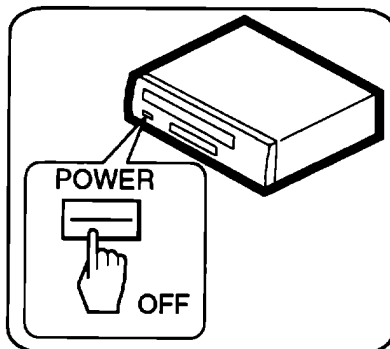
• No TRAY (トレイ無しの場合)



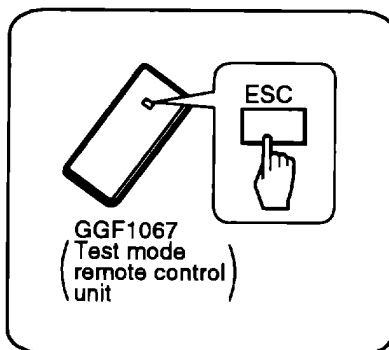
TEST MODE: PLAY



TEST MODE: OFF



OR



5. NECESSARY ADJUSTMENT POINTS (必要な調整項目)

When (このような時)

Adjustment Points

Exchange pickup
(ピックアップを交換したとき)

Mechanical point ①,②,③,④,⑤,⑥,⑦

Electric point

Exchange spindle motor
(スピンドルモータを交換したとき)

Mechanical point ③,④

Electric point

Exchange board
MOTHER ASSY
(マザーボードを交換したとき)

Mechanical point ①,④,⑤,⑥

Electric point ①,②

Track Skip
(音とびをおこすとき)

Mechanical point ③,⑤,⑥

Electric point

Slow Search (サーチに時間がかかる)
Slow Start (ブレイに時間がかかる)

Mechanical point ③,⑤,⑥

Electric point

Mechanical point

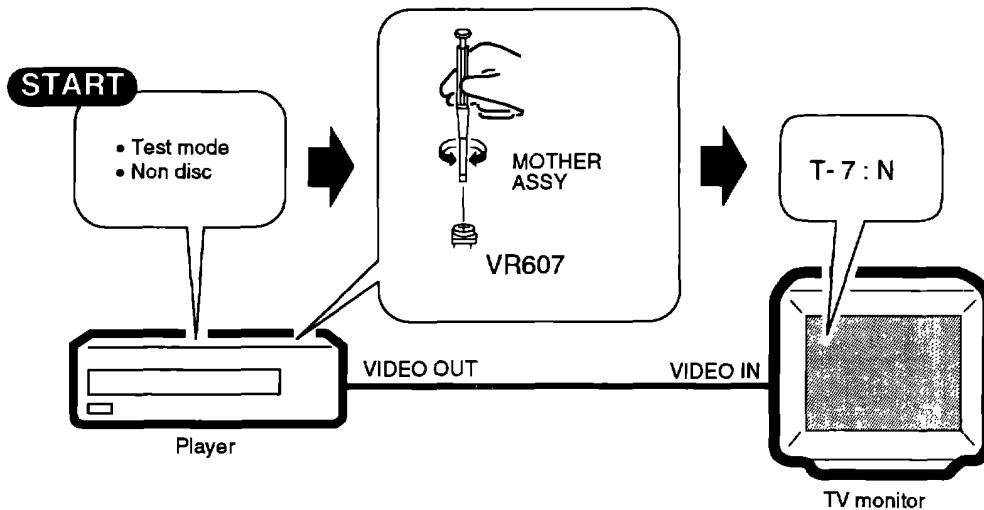
Electric point

Mechanical point

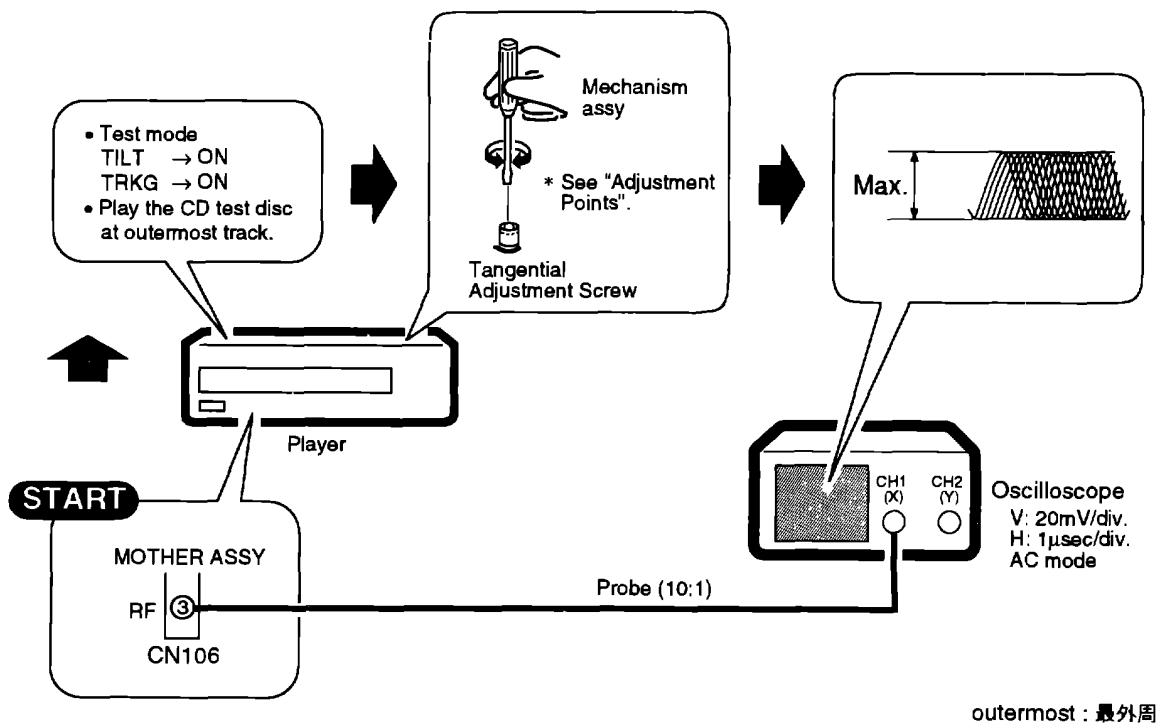
Electric point

6. MECHANICAL ADJUSTMENT (機構系の調整)

1 Tilt Offset Adjustment (チルトオフセット調整)

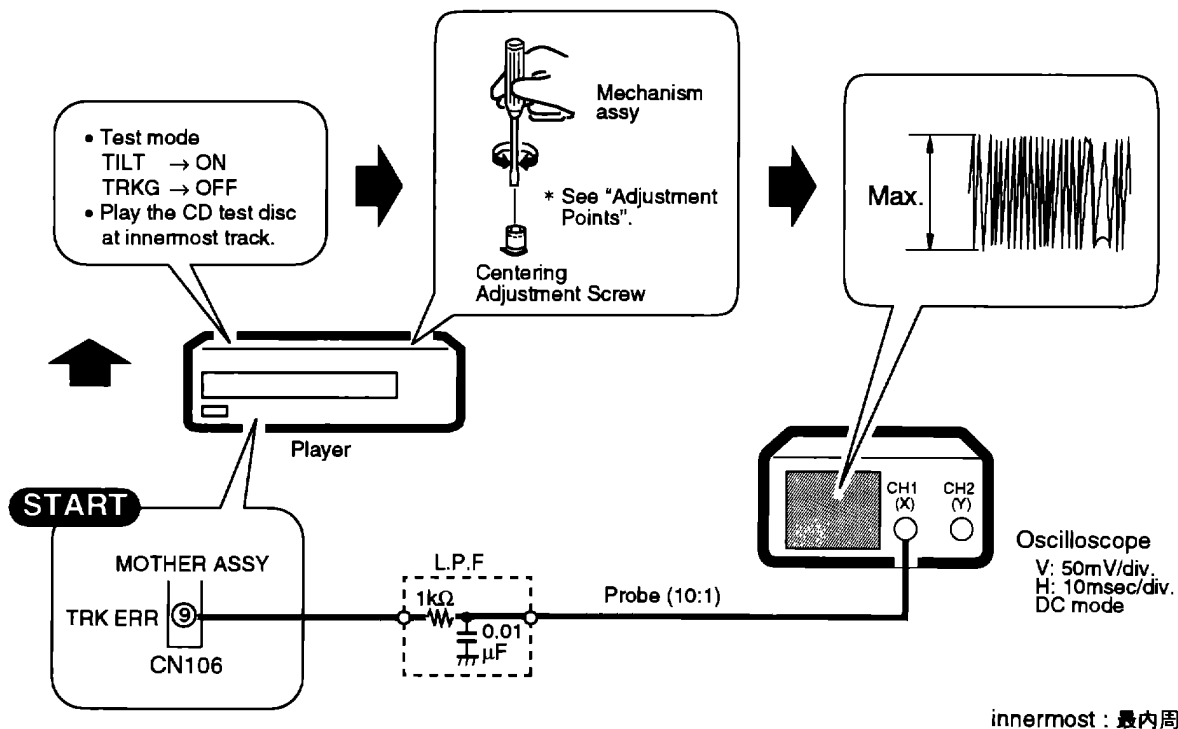


2 Tangential Direction Angle Adjustment (タンジェンシャル傾き調整)



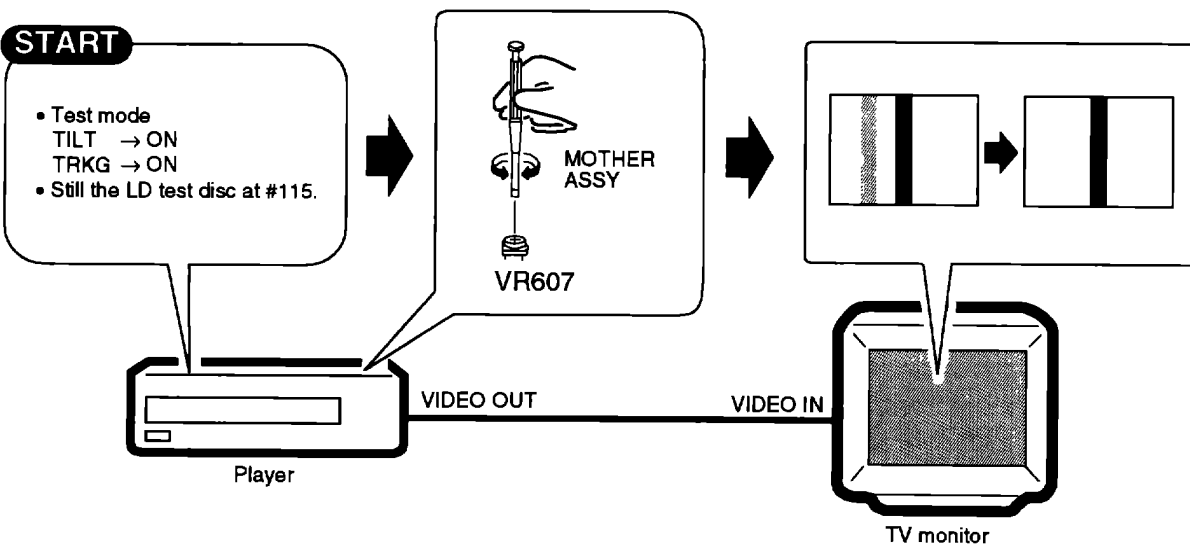
3 Spindle Motor Centering Adjustment

(スピンドル芯出し調整)

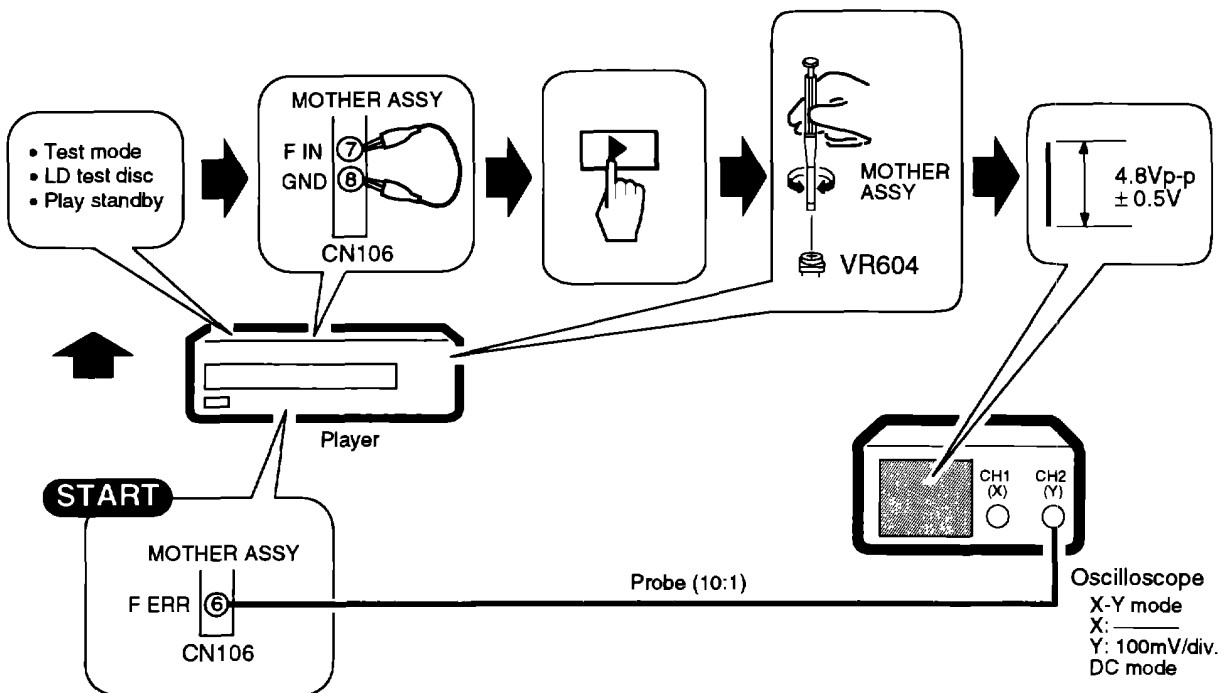


4 Crosstalk Check and Fine Tilt Offset Adjustment

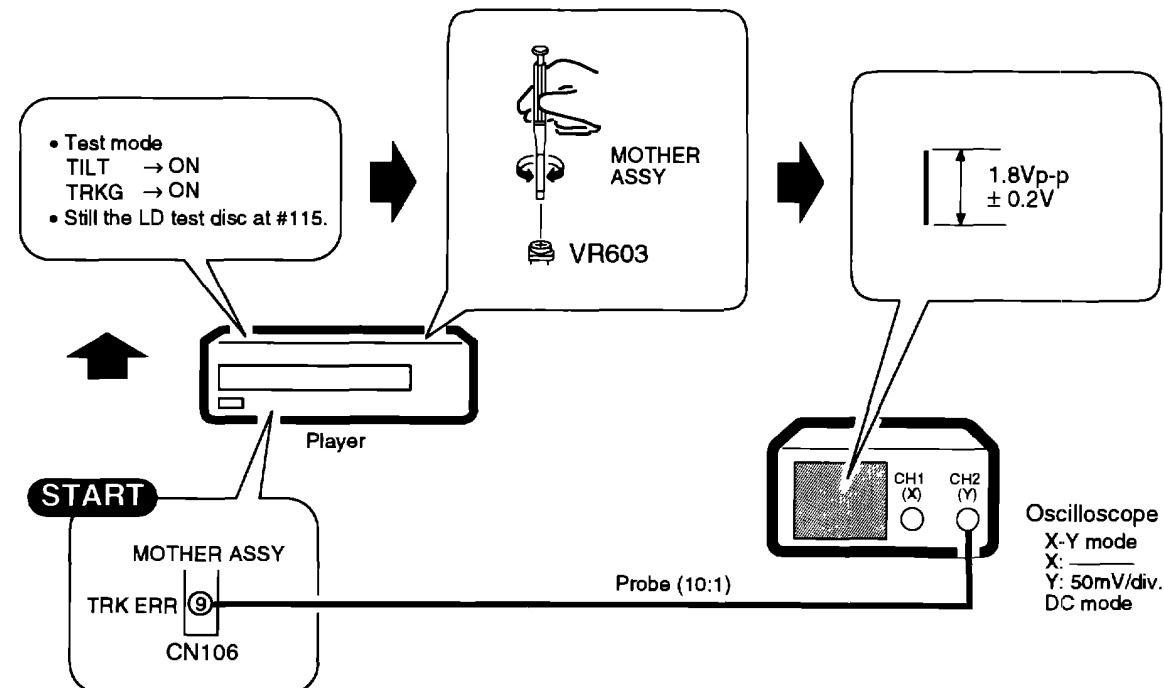
(クロストーク確認及び、チルトオフセット調整)



5 Focus Servo Loop Gain Adjustment (フォーカスサーボループゲイン調整)



6 Tracking Servo Loop Gain Adjustment (トラッキングサーボループゲイン調整)



7 RF Level Check (RFレベル確認)

- Test mode
TILT → ON
TRKG → ON
- Still the LD test disc at #115.



〈CHECK〉



$$280\text{mVp-p} < E < 630\text{mVp-p}$$



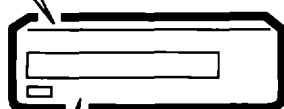
START

MOTHER ASSY

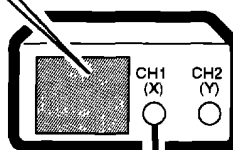
RF

③

CN106



Player

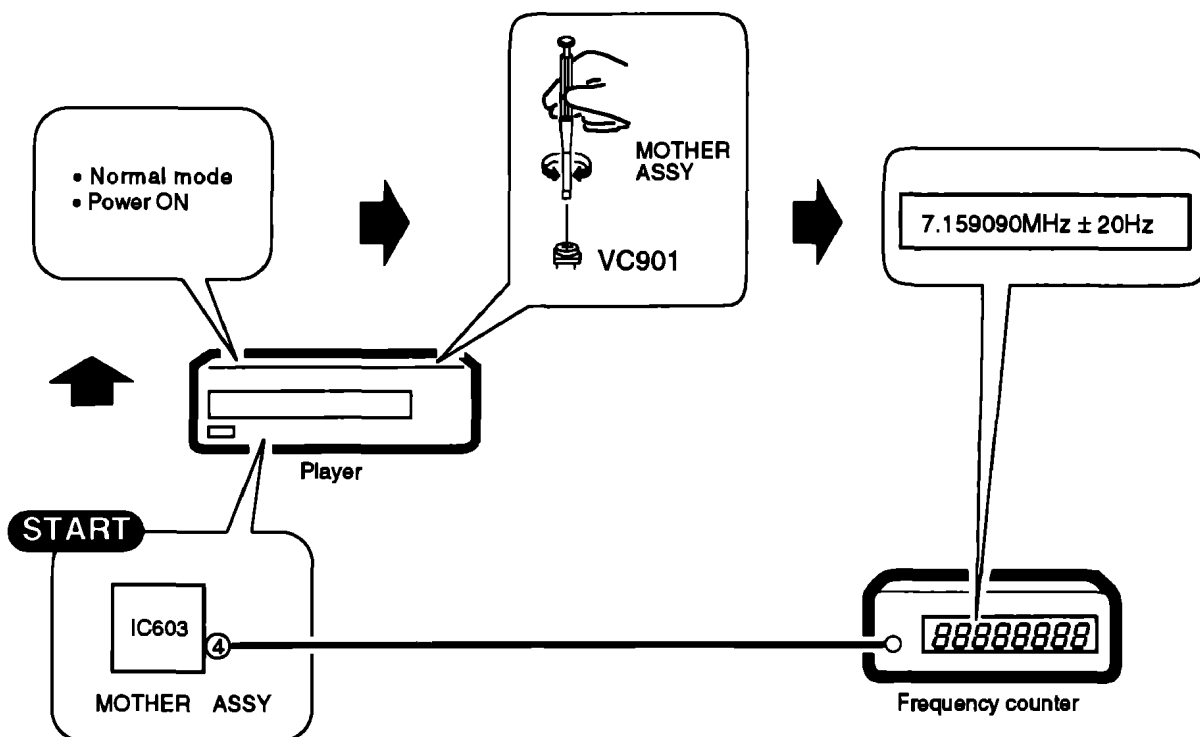


Probe (10:1)

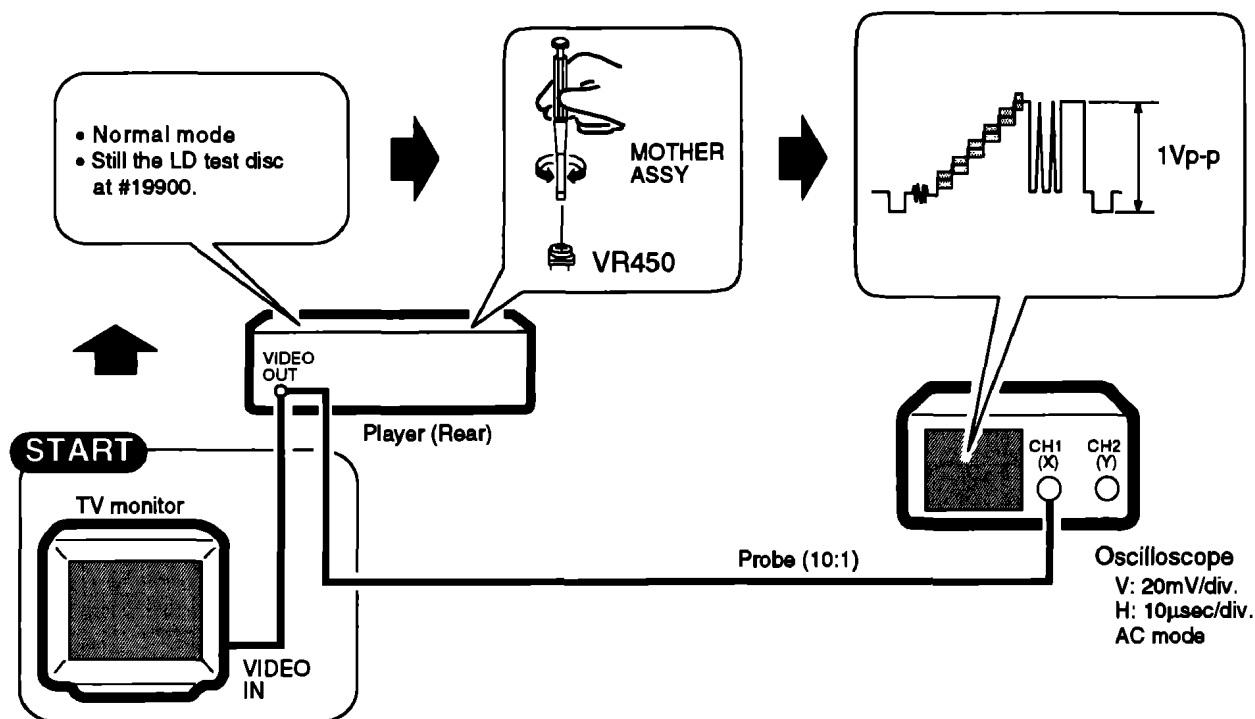
Oscilloscope
V: 20mV/div.
H: 1μsec/div.
AC mode

7. ELECTRICAL ADJUSTMENT (電気系の調整)

① Master Clock Adjustment (マスタークロック調整)

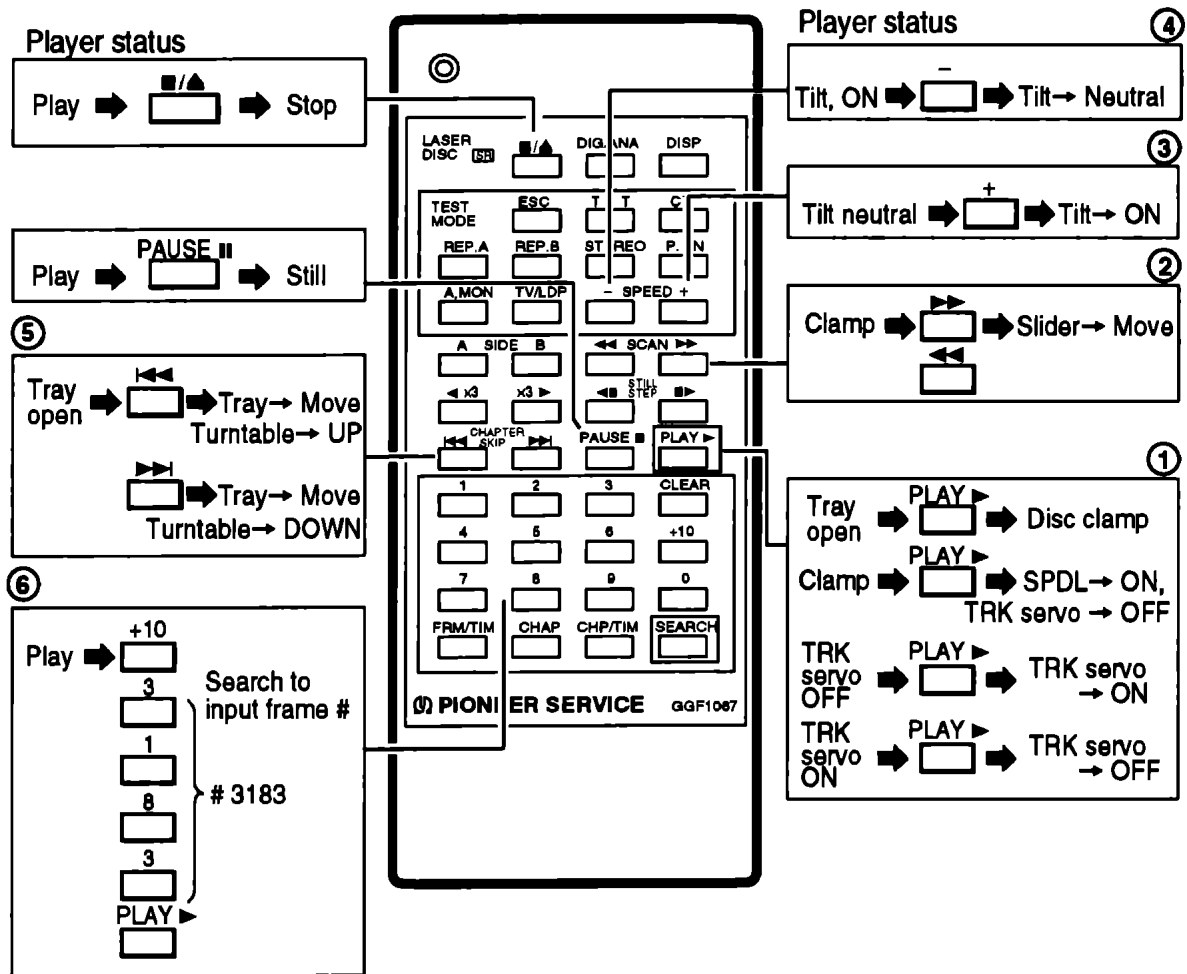


② Output Video Level Adjustment (出力ビデオレベル調整)

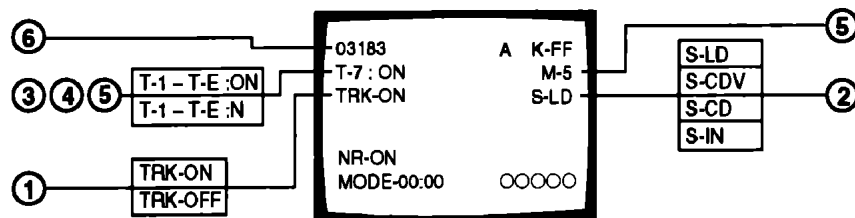


8. OPERATIONS IN THE TEST MODE (テストモード時のサービス用リモコン操作方法)

■ Test Mode Remote Control Unit (GGF1067)



■ TV Monitor Display

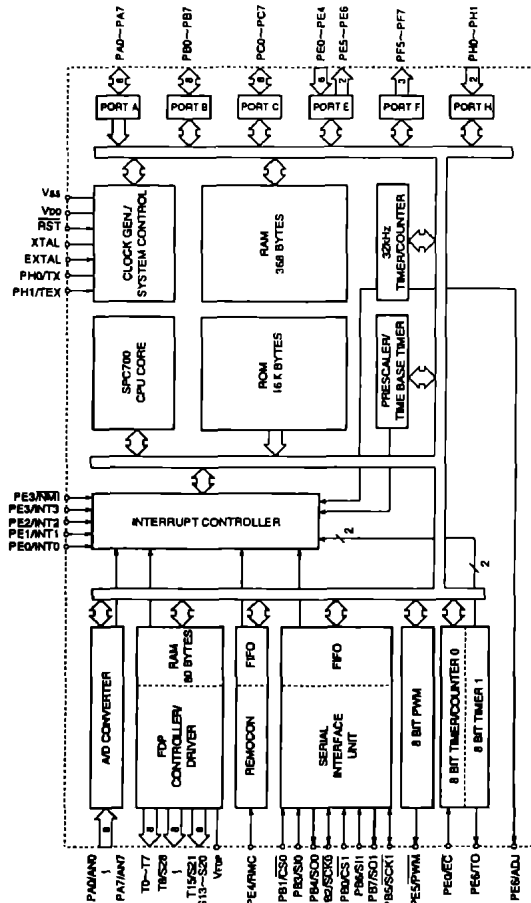


6. IC INFORMATION

■ PDG160B (FLKY ASSY : IC101)

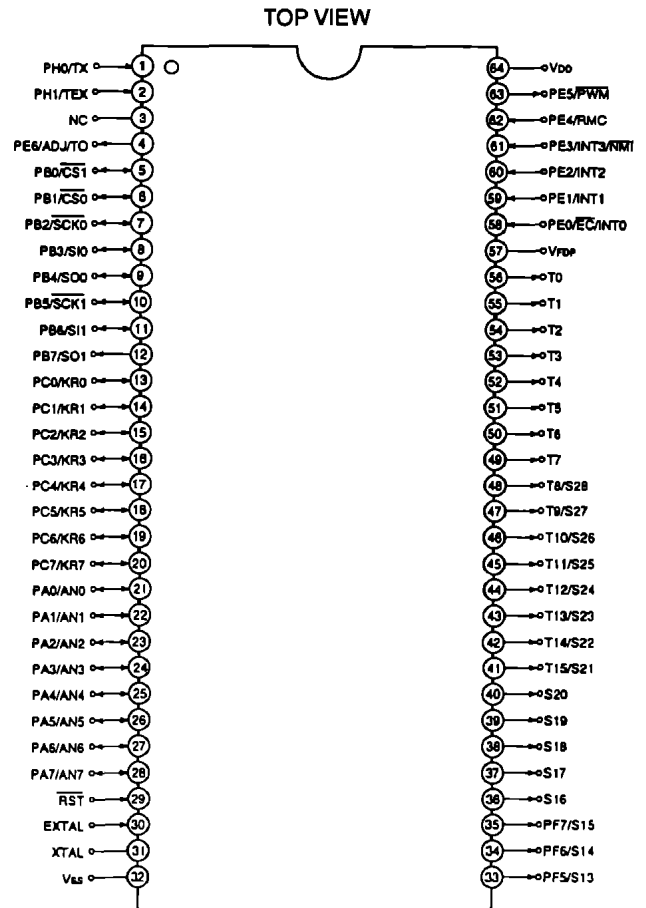
● MODE CONTROL IC

● Block Diagram



- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

● Pin Assignment



● Pin Functions

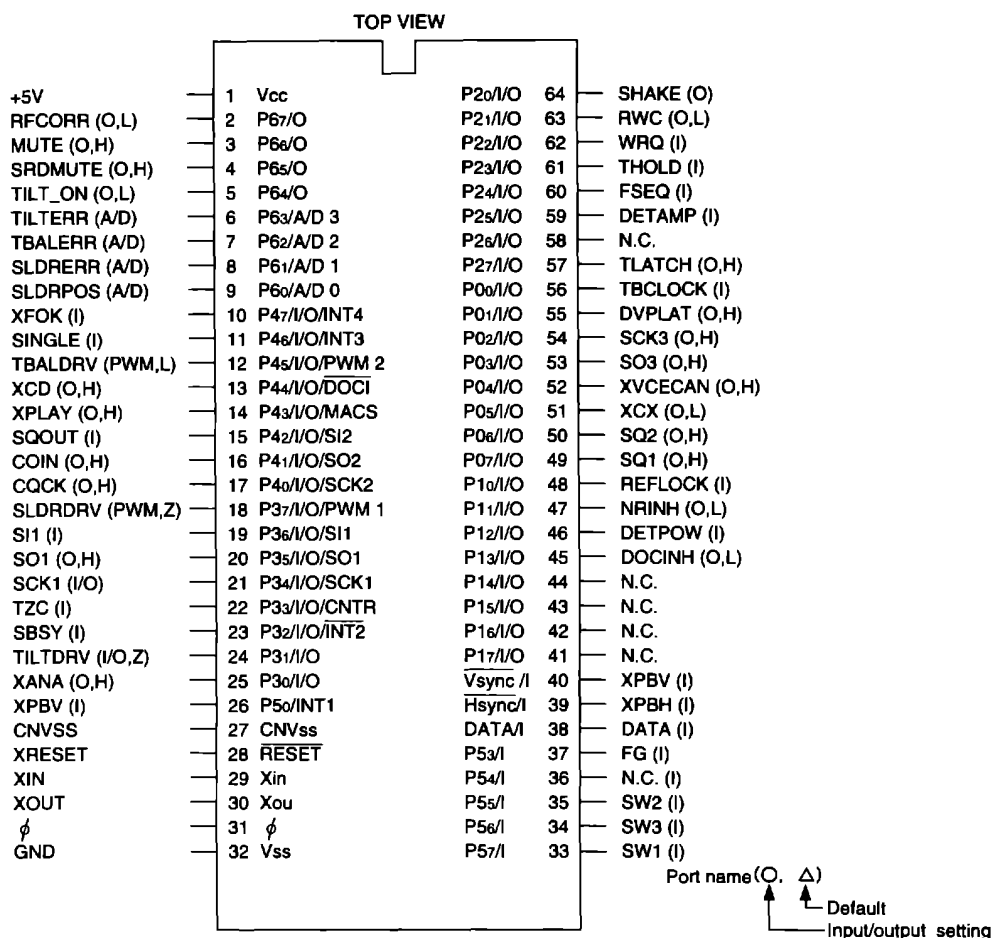
Pin name	I/O	Function	
PA0/AN0 ~ PA7/AN7	I/O / analog input	(Port A) The input and output can be specified in units of one bit by an 8-bit input/output port. Internal pull-up resistors (8) can be specified in units of four bits by software.	Analog input pins (8) of A/D converter.
PB0/CS1	I/O / Input	(Port B) The input and output can be specified in units of one bit by an 8-bit input/output port. Internal pull-up resistors (8) can be specified in units of four bits by software.	Chip select input pin of serial interface (CH1).
PB1/CS0	I/O / Input		Chip select input pin of serial interface (CH0).
PB2/SCK0	I/O / I/O		Input/output pin of serial clock (CH0).
PB3/SI0	I/O / Input		Input pin of serial data (CH0).
PB4/SO0	I/O / Output		Output pin of serial data (CH0).
PB5/SCK1	I/O / I/O		Input/output pin of serial clock (CH1).
PB6/SI1	I/O / Input		Input pin of serial data (CH1).
PB7/SO1	I/O / Output		Output pin of serial data (CH1).

Pin name	I/O	Function		
PC0/KR0 ~ PC7/KR7	I/O / Input	(Port C) The input and output can be specified in units of one bit by an 8-bit output port. This port can drive a sink current of 12 mA. Internal pull-up resistors (8) can be specified in units of four bits by software.	Key return input pin during key scanning using an FDP segment signal.	
PE0/INT0/ \overline{EC}	Input / Input / Input	(Port E) Low-order five bits are a 7-bit input-only port, and high-order two bits are a 7-bit output-only port.	External event input pin (1) of timer and counter.	
PE1/INT1	Input / Input		External interrupt request input pins (4).	
PE2/INT2	Input / Input			
PE3/INT3/ \overline{NMI}	Input / Input / Input			Non-maskable interrupt request pin.
PE4/RMC	Input / Input			Input pin of remote control receive circuit.
PE5	Output			8-bit PWM output pin.
PE6/ADJ/TO	Output			Rectangular wave output signal of timer and counter. Frequency-division output pin of 32-kHz oscillation.
PF5/S13 ~ PF7/S15	Output / Output	(Port F) 3-bit output pin (3)	FDP segment signal output pin.	
S16~S20	Output	FDP segment signal output pin.		
T8/S28 ~ T15/S21	Output / Output	Output pin of FDP timing signal and segment signal.		
T0~T7	Output	Output pin of FDP timing signal.		
V _{FDP}		FDP voltage supply pin when internal resistor is specified by mask option.		
EXTAL	Input	Crystal connection pin for system clock oscillation. A clock should be input to the EXTAL pin when it is supplied from the outside. In this case, a clock with opposite phase should be input to the XTAL pin.		
XTAL	Output			
PH1/TEX	Input / Input	(Port H) 2-bit input pin (2)	Crystal connection pin for 32-kHz timer and counter clock oscillation. A 32-kHz crystal oscillator is put between TEX and TX pins. When this signal is used as an event input, the clock source should be connected to the TEX pin, and the TX pin should be opened.	
PH0/TX	Input / Output			
RST	Input	Low-level active system reset pin. The RST pin is an input pin.		
NC		NC pin. This pin should be connected to V _{DD} during normal operation.		
V _{DD}		Power supply connection pin.		
V _{SS}		Ground		

■ PD0232A (MOTHER ASSY : IC101)

● MECHANISM CONTROL IC

● Pin Assignment



● Pin Functions

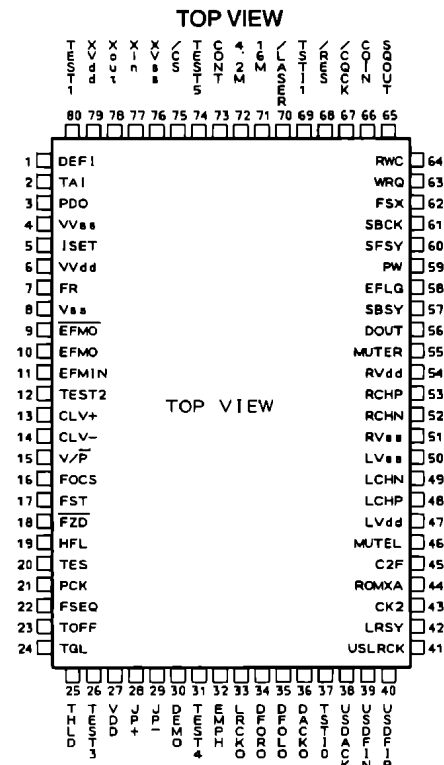
No.	Pin name	I/O	Function
1	Vcc	I	Power supply connection pin 5 V ±10% applied.
2	RFCORR	O	RF collection switch signal output pin. "H"=gain up CD, CDV : Low, gain raised with CAV internal adjustment, otherwise high.
3	MUTE	O	Audio system audio mute control signal output pin. "L"=mute off, "H"=mute
4	SRDMUTE	O	AC3 mute control signal output pin. Mute off only during play. "L"=mute off, "H"=Mute
5	TILT_ON	O	Tilt operating data. (for debugging) "H"=operating For tilt operation verification
6	TILTERR	I A/D	This signal is converted from analog to digital and used as tilt servo control input. The tilt motor is controlled to make this signal 2.5 V.
7	TBALERR	I A/D	Tracking balance error signal input pin. This signal is converted from analog to digital and used for tracking offset control input.
8	SLDERR	I A/D	This signal is converted from analog to digital and used for tracking offset control input. The slide motor is controlled to make this signal 2.5 V.
9	SLDPOS	I A/D	Pickup position detection switch input pin. The switches are resistance divided, the A/D input value read in, and the position detected.
10	XFOK	I	Focus servo lock signal input pin. "L"=lock, "H"=unlock Used for focus servo lock detection.
11	SINGLE	I	Uses the rear panel ATT switch in single mode and communicates this data to the mode controller. "L"=single, "H"=normal
12	TBAL DRV	O PMW	PWM outputs the tracking offset for use as the auto tracking offset. 910μsec, 3 – value control: H, L, Z
13	XCD	O	LD/CD switching signal output pin. "L"=CD, "H"=LD
14	XPLAY	O	Spindle servo signal output pin. "L"=servo underway, "H"=acceleration, brake, stop underway
15	SQOUT	I	Input pin for command data from DSP. SUBQ is read out.

PD0232A

No.	Pin name	I/O	Function
16	COIN	O	Pin for command data output to DSP
17	CQCK	O	DSP read/write command clock output pin. Rising edge read in.
18	SLDDRV	O PMW	Slider control signal output pin. 5V=FWD, 0V=REV, 2.5V=STOP 910µsec, 3 – value control: H, L, Z
19	SI1	I	Pin for data input from mode controller IC
20	SO1	O	Output for serial data to mode controller IC
21	SCK1	I/O	Mode controller IC and serial communications clock. Other than when communicating with mode controller IC, input mode.
22	TZC	I INT	Tracking error zero cross signal input pin. This signal monitored for misclamping detection and tracking count search.
23	SBSY	I	Not used
24	TILT DRV	I/O	Load/tilt control output pin. 0.5 V – tray in, out/tilt down, up 2.5V – stop tilt drive PWM output for tilt servo.
25	XANA	O	Digital analog audio switching signal output pin. "L"=analog, "H"=digital
26	XPBV	I	LD/CDV playback vertical sync signal input pin. "L"=vertical sync underway
27	CNVSS	I	A/D conversion ground
28	XRESET	I	Reset signal input pin. "L"=reset, "H"=reset off. Controlled by mode controller.
29	XIN	I	9MHz clock oscillation input pin
30	XOUT	O	9MHz clock oscillation output pin
31	N.C.	O	Dedicated output pin, so other uses prohibited.
32	GND	I	Ground
33	SW1	I	Loading/tilt position detection switch input pin
34	SW3	I	Loading/tilt position detection switch input pin
35	SW2	I	Loading/tilt position detection switch input pin
36	N.C.	I	Not used
37	FG	I	Spindle motor FG signal input pin. 16 pulses per rotation, used within microcomputer frequency divided by 2.
38	DATA	I	Mechanism controller built – in Phillips code/decode input pin
39	XPBH	I	Playback H – sync input. For Phillips coding/decoding
40	XPBV	I	Playback V – sync input. For Phillips coding/decoding
41	N.C.	O	Not used
42	N.C.	O	Not used
43	N.C.	O	Not used
44	N.C.	O	Not used
45	DOCINH	O	3 – value clamp pulse and clamp killer circuit control
46	DETPW	I	Used as power supply abnormality signal input port. "L"=normal, "H"=abnormal
47	NRINH	O	VDEM noise reduction control output pin. "L"=normal, "H"=no NR
48	REFLOCK	I	Input pin for reference signal from DVP. "L"=phase not aligned, "H"=phase aligned
49	SQ1	O	Analog audio switching signal output pin. 1/L. "L"=squelch off, "H"=squelch on
50	SQ2	O	Analog audio switching signal output pin. 2/R. "L"=squelch off, "H"=squelch on
51	XCX	O	Analog audio CX noise reduction switching signal output pin. "L"=CX on, "H"=CX off
52	XVCECAN	O	Voice cancel output. "L"=cancel on, "H"=cancel off
53	SO3	O	Serial 3 data signal output pin. The serial signals are common and are distinguished with the latch signals (DVPLAT, TLAT).
54	SCK3	O	Serial 3 clock signal output pin
55	DVPLAT	O	PD0192 serial latch signal output pin. Latch at rising edge
56	TBC LOCK	I	Spindle power on detection signal input pin. "L"=overcurrent, "H"=normal
57	T LATCH	O	Latch output of serial control for DAC & digital filter IC PD2026A. Latches at falling edge
58	N.C.	O	Not used
59	DETAMP	I	Spindle overcurrent detection signal input pin. "L"=overcurrent, "H"=normal
60	FSEQ	I	Subcode sync match detection signal input pin. "L"=does not match, "H"=matches
61	THOLD	I	Track jump accelerating/decelerating signal input pin. "L"=neither, "H"=accelerating/decelerating
62	WRQ	I	Subcode Q read OK signal input pin. "L"=NG, "H"=OK. This pin goes high when the subcode Q data passes the CRC check.
63	RWC	O	DSP read/write command signal output pin. "L"=read, "H"=write
64	SHAKE	I/O	Handshake signal pin for data communications with mode controller IC. This pin is a bidirectional data pin and its input and output are controlled by the respective microcomputers.

● SERVO CONTROL IC

- **Pin Assignment**



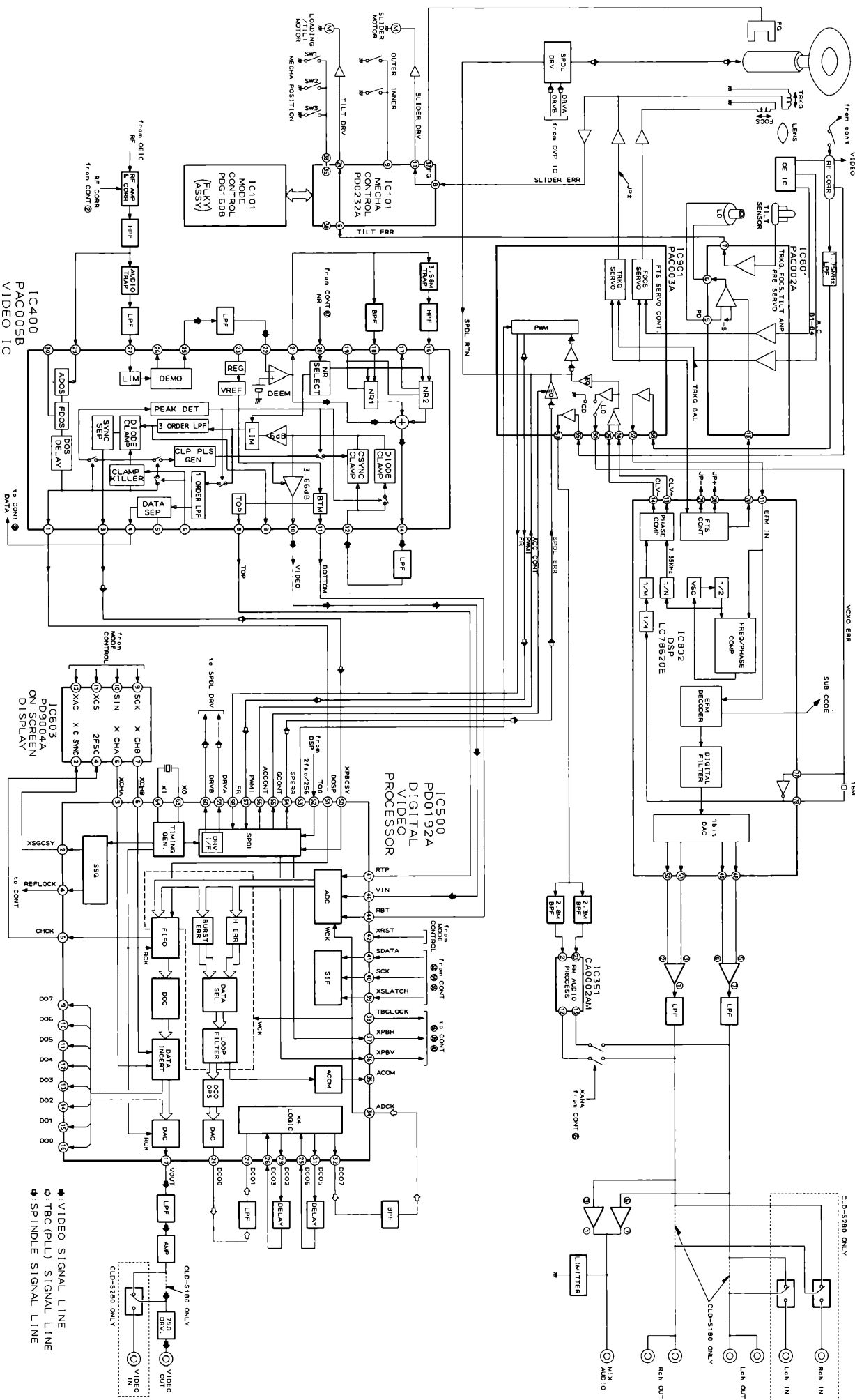
No.	Pin name	I/O	Function	
1	DE-FI	I	Defect detection signal (DEF) input pin. (Low when not used.)	
2	TAI	I	For PLL use	Test input pin. Pull-down resistor built-in.
3	PDO	O		Phase comparison output pin for external VCO control.
4	V V _{SS}			Power pin for internal VCO. Usually, set to 0 V.
5	IS _{ET}	AI		Resistor connection pin for PDO output current adjustment.
6	V V _{DD}			Grounding pin for internal VCO. Usually, set to 5 V.
7	FR	AI		This pin is used for VCO frequency range adjustment.
8	V _{SS}		Digital system grounding pin. Usually, set to 0 V.	
9	EFM _O	O	For slice level control use.	EFM signal inversion output pin.
10	EFMO	O		EFM signal output pin.
11	EFMIN	I		EFM signal input pin.
12	TEST2	I	Test input pin. Pull-down resistor built-in.	
13	CLV+	O	Output pins for spindle servo control. Accelerated when the CLV+ pin is high, and decelerated when the CLV- pin is high. The ternary value can be output using a command.	
14	CLV-	O		
15	V/P	O	Automatic selection monitor output pin of rough servo and phase control. This pin selects the rough servo when high and selects the phase control mode when low.	
16	FOCS	O	Focus servo ON/OFF output pin. Focus servo ON when low.	
17	FST	O	Focus start pulse output pin. Open-drain output.	
18	F2D	I	Focus error zero-cross signal input pin. (Low when not used.)	
19	HFL	I	Track detection signal input pin. Schmitt input	
20	TES	I	Tracking error signal input pin. Schmitt input.	
21	PCK	O	Clock monitor pin for EFM data reproduction. 4.3218 MHz during phase locking.	
22	FSEQ	O	Sync signal detection output pin. Set high when the sync signal detected from an EFM signal coincides with an internally produced sync signal.	
23	TOFF	O	Tracking OFF output pin.	
24	TGL	O	Tracking gain selection output pin. This pin raises the gain when low.	
25	THLD	O	Tracking hold output pin.	
26	TEST3	I	Test input pin. A pull-down resistor built-in.	

LC78620E

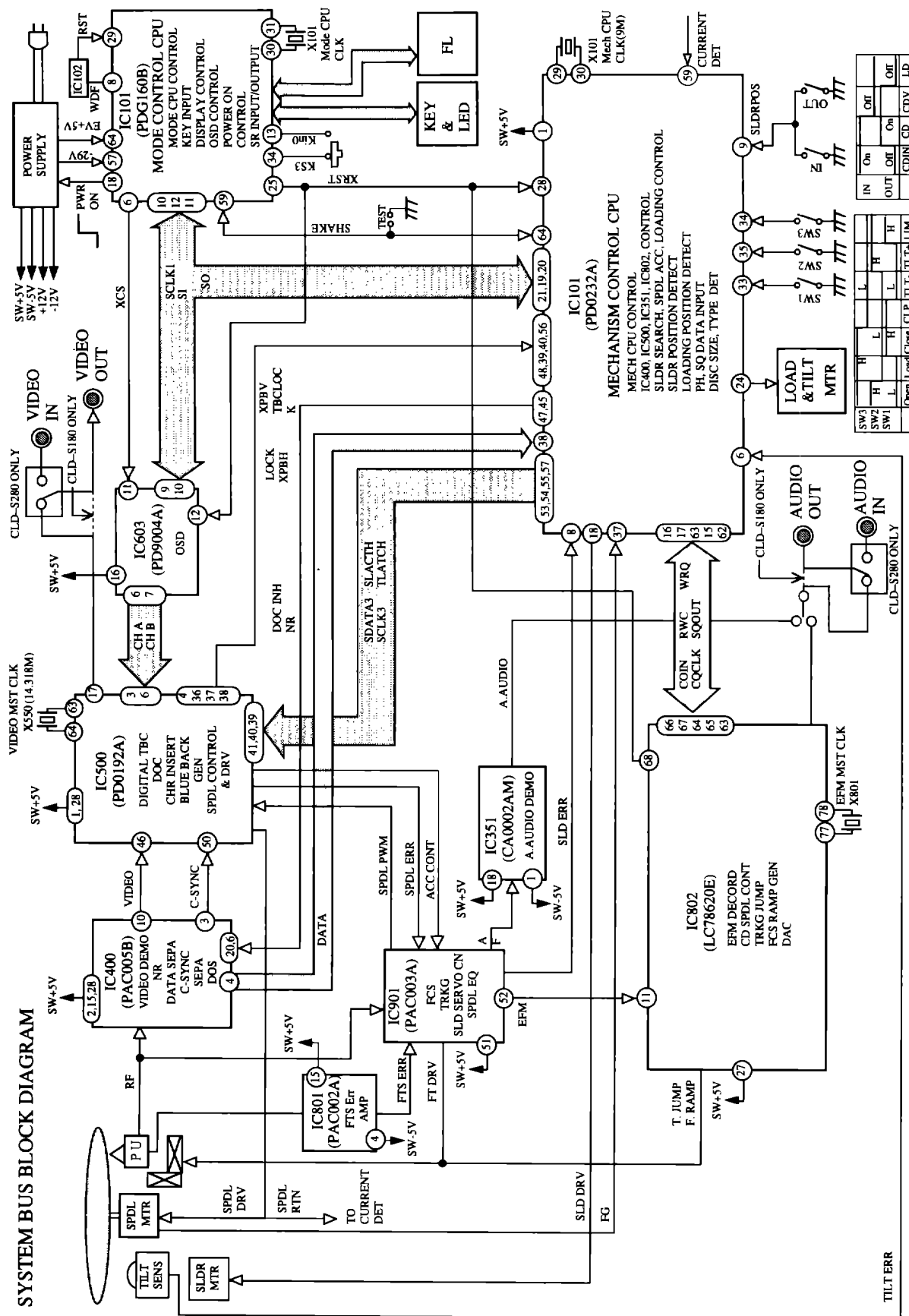
No.	Pin name	I/O	Function				
27	V _{DD}		Digital system power pin. Usually, set to 5 V.				
28	JP+	O	Track jump output pin. Accelerated during a jump in the outer-circumference direction when the JP+ pin is high. Accelerated during a jump in the inner circumference direction or decelerated during a jump in the outer circumference direction when the JP- pin is high. The ternary value can be output using a command.				
29	JP-	O					
30	DEMO	I	Sounding function input pin for set adjustment process. A pull-down resistor built-in.				
31	TEST4	I	Test input pin. A pull-down resistor built-in.				
32	EMPH	O	Deemphasis monitor output pin. A deemphasis disc is in the playback state when high.				
33	LRCKO	O	Digital filter output		Word clock output		
34	DFORO	O			R-channel data output		
35	DFOLO	O			L-channel data output		
36	DACKO	O			Bit clock output		
37	TST10	O	Test output pin. Open (Usually, output when low.)				
38	USDACK	I	Antishock-compatible input. (Low when not used.)		Bit clock input		
39	USDFIN	I			L/R-channel data		
40	USDFIR	I			Test input pin. Usually, set low.		
41	USLRCK	I	Antishock-compatible input	Word clock input. (Set low when not used.)			
42	LRSY	O	ROMXA-compatible output		L/R clock output		
43	CK2	O			Bit clock output	DACLK (During RES)	Polarity inversion (CK2CON mode)
44	ROMXA	O			Data output	Data (interpolation)(During RES)	ROMOUT (ROMKA mode)
45	C2F	O			C2 flag output		
46	MUTEL	O	For 1bit DAC use		Mute output pin		
47	L V _{DD}				L-channel power pin. Usually, set to 5 V.		
48	LCHP	O			L-channel P output pin		
49	LCHN	O			L-channel N output pin		
50	LV _{SS}				L-channel grounding pin. Usually, set to 0 V.		
51	RV _{SS}				R-channel grounding pin. Usually, set to 0 V.		
52	RCHN	O			R-channel N output pin		
53	RCHP	O			R-channel P output pin		
54	RV _{DD}				R-channel power pin. Usually, set to 5 V.		
55	MUTER	O					Mute output pin
56	DOUT	O	Digital output pin				
57	SBSY	O	Cycle signal output pin of subcode block				
58	EFLG	O	Single and double correction monitor pin of C1 and C2				
59	PW	O	Output pin of subcodes P, Q, R, S, T, U, and W				
60	SFSY	O	Cycle signal output pin of subcode frame. Falls when a subcode enters the standby mode.				
61	SBCK	I	Subcode read clock input pin. Schmitt input				
62	FSX	O	Output pin of 7.35-kHz sync signal divided from crystal oscillation				
63	WRQ	O	Output standby output pin of subcode Q				
64	RWC	I	Read/write control input pin				
65	SQOUT	O	Subcode Q output pin				
66	COIN	I	Command input pin from microcomputer				
67	CQCK	I	Subcode fetch clock input pin from command input fetch clock or SQOUT. Schmitt input				
68	RES	I	Chip select input pin. Set low once during the power-on sequence.				
69	TST11	O	Test input pin. Open (A low signal is usually output.)				
70	LASER	O	Laser ON/OFF output pin. This signal is controlled by the serial data command from a microcomputer.				
71	16M	O	16.9344-MHz output pin. 33.8688 MHz is output in only the PB mode at 4 times normal speed.				
72	4.2M	O	4.2336-MHz output pin				
73	CONT	O	Reserved output pin. This signal is controlled by the serial data command from a microcomputer.				
74	TEST5	I	Test input pin. A pull-down resistor built-in.				
75	CS	I	Chip select input pin. A pull-down resistor built-in.				
76	XV _{SS}		Grounding pin for crystal oscillation. Usually, set to 0 V.				
77	X _{IN}	I	Connection pins of 16.9344-MHz crystal oscillator.				
78	X _{OUT}	O	A 33.8688-MHz crystal oscillator is connected in the PB system at 4-times normal speed.				
79	XV _{DD}		Power pin for crystal oscillation. Usually, set to 5 V.				
80	TEST1	I	Test input pin. A pull-down resistor built-in.				

7. BLOCK DIAGRAM

7.1 OVERALL BLOCK DIAGRAM

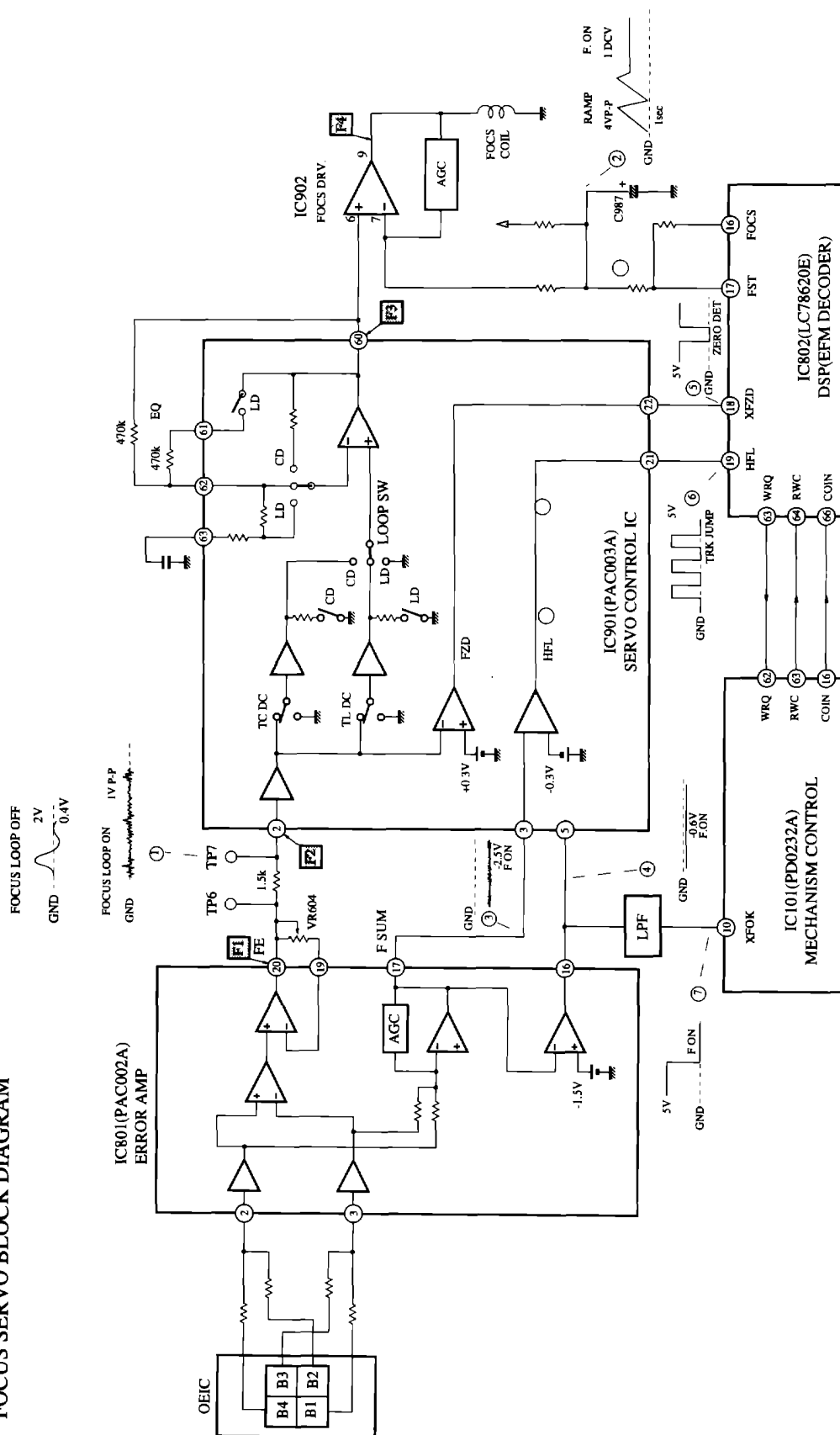


7.2 SYSTEM BUS BLOCK DIAGRAM



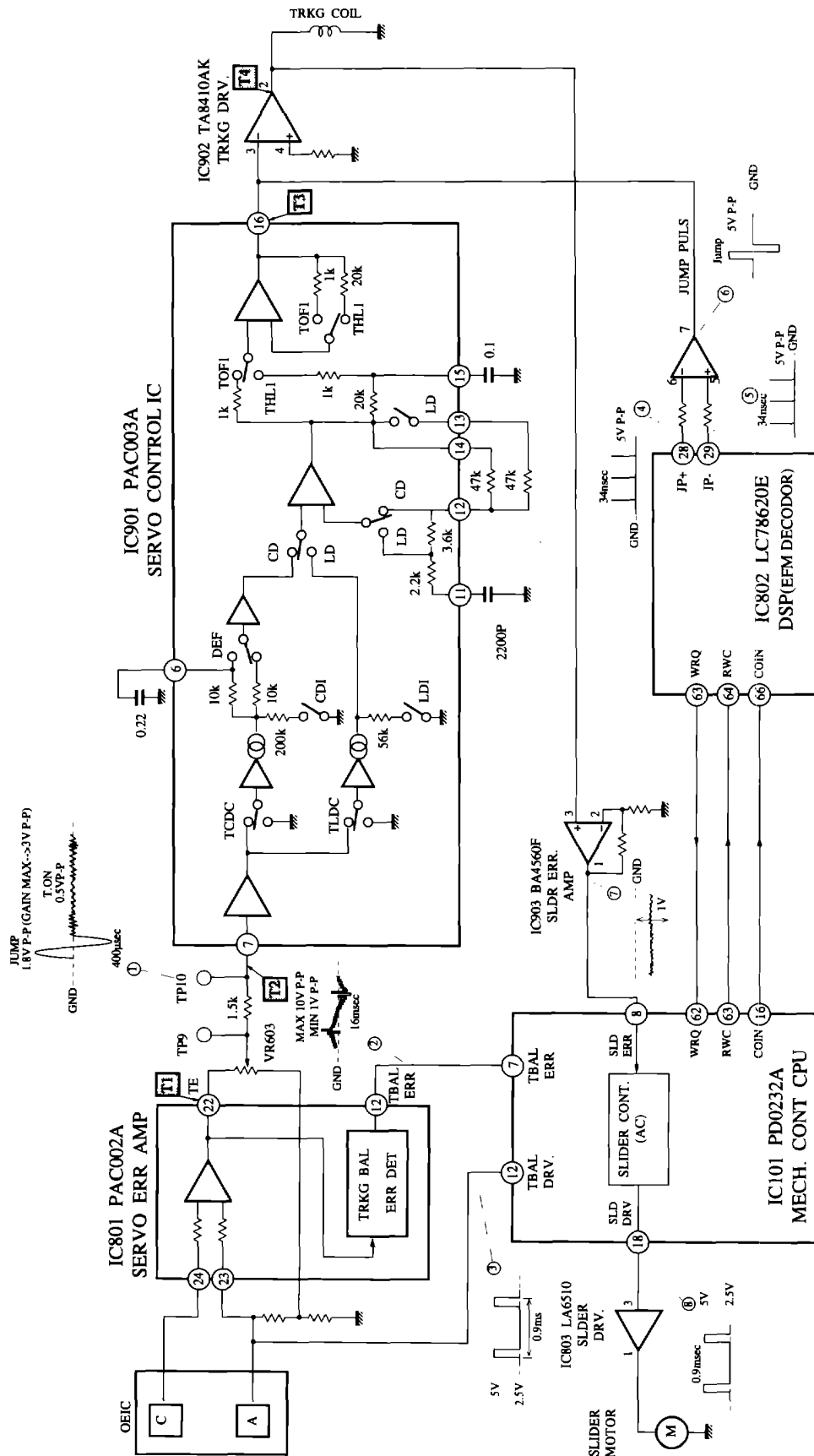
7.3 FOCUS SERVO BLOCK DIAGRAM

FOCUS SERVO BLOCK DIAGRAM

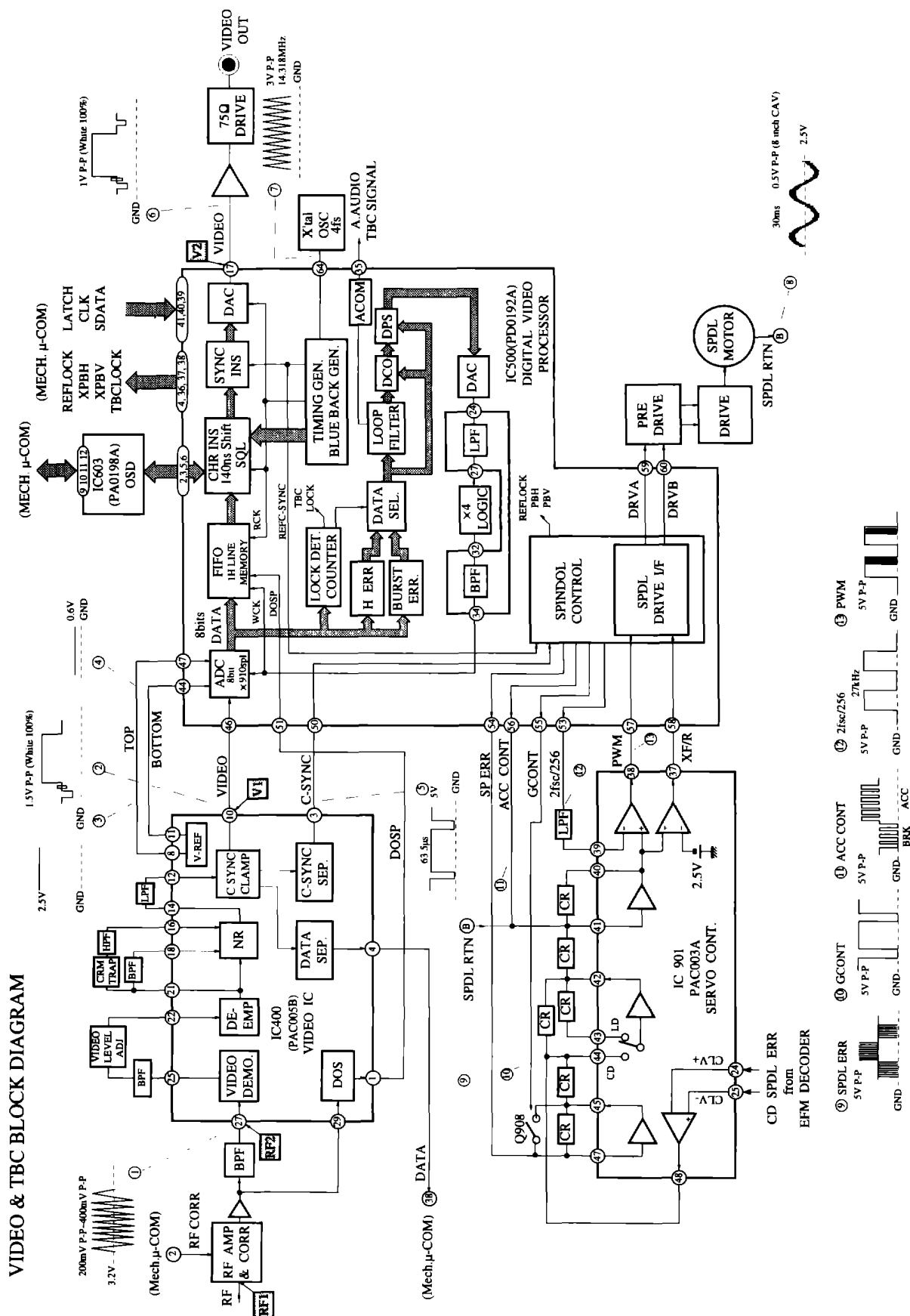


7.4 TRKG AND SLID BLOCK DIAGRAM

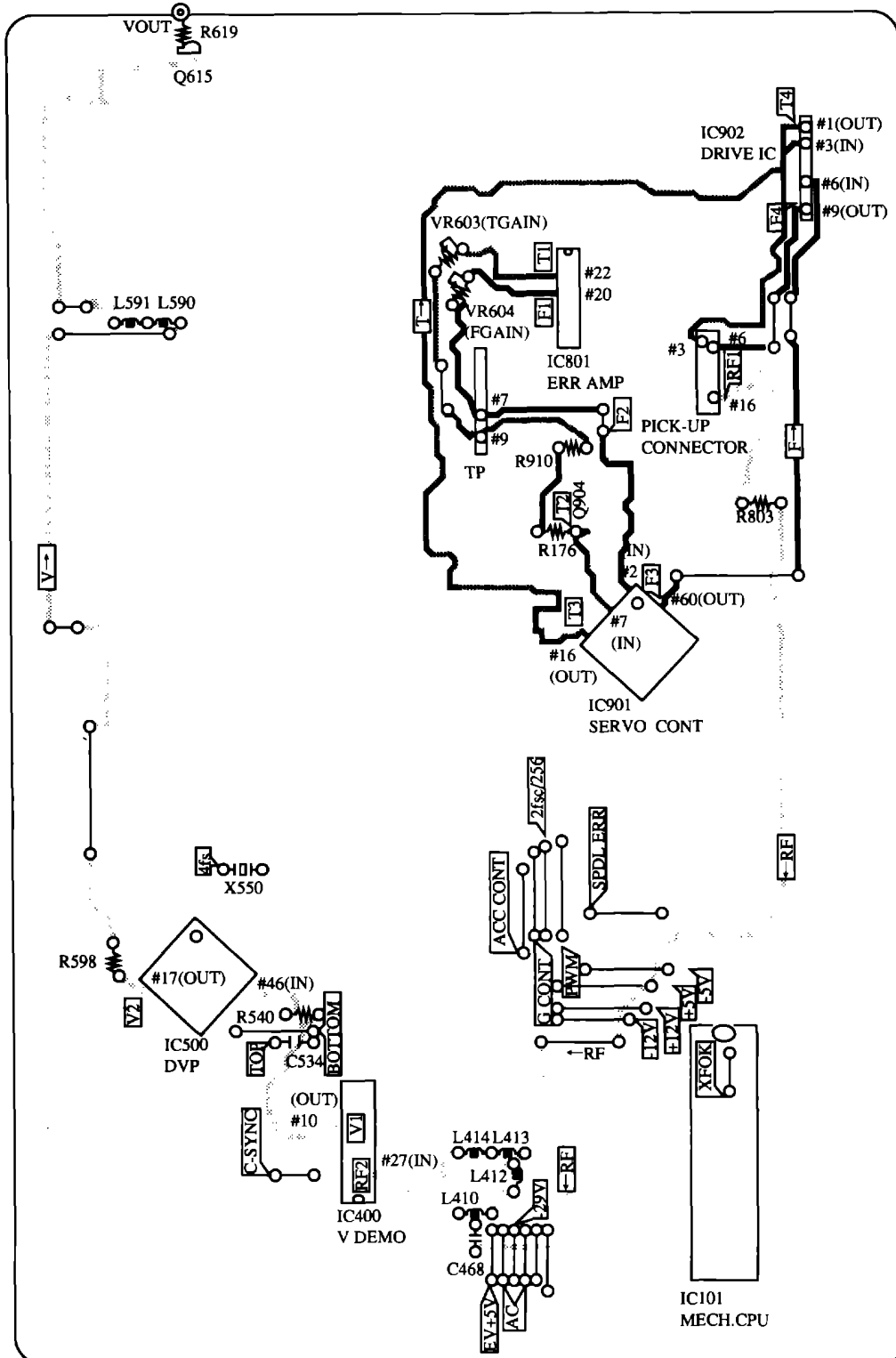
TRKG & SLID BLOCK DIAGRAM



VIDEO & TBC BLOCK DIAGRAM



● INSPECTION LAND AND PATTERN (MOTHER ASSY)



F1 is the inspection land for signal check. **V1→** indicates the direction of a signal.

FOCUS SERVO system: A signal flows in the order of F1 → F2 → F3 → F4.

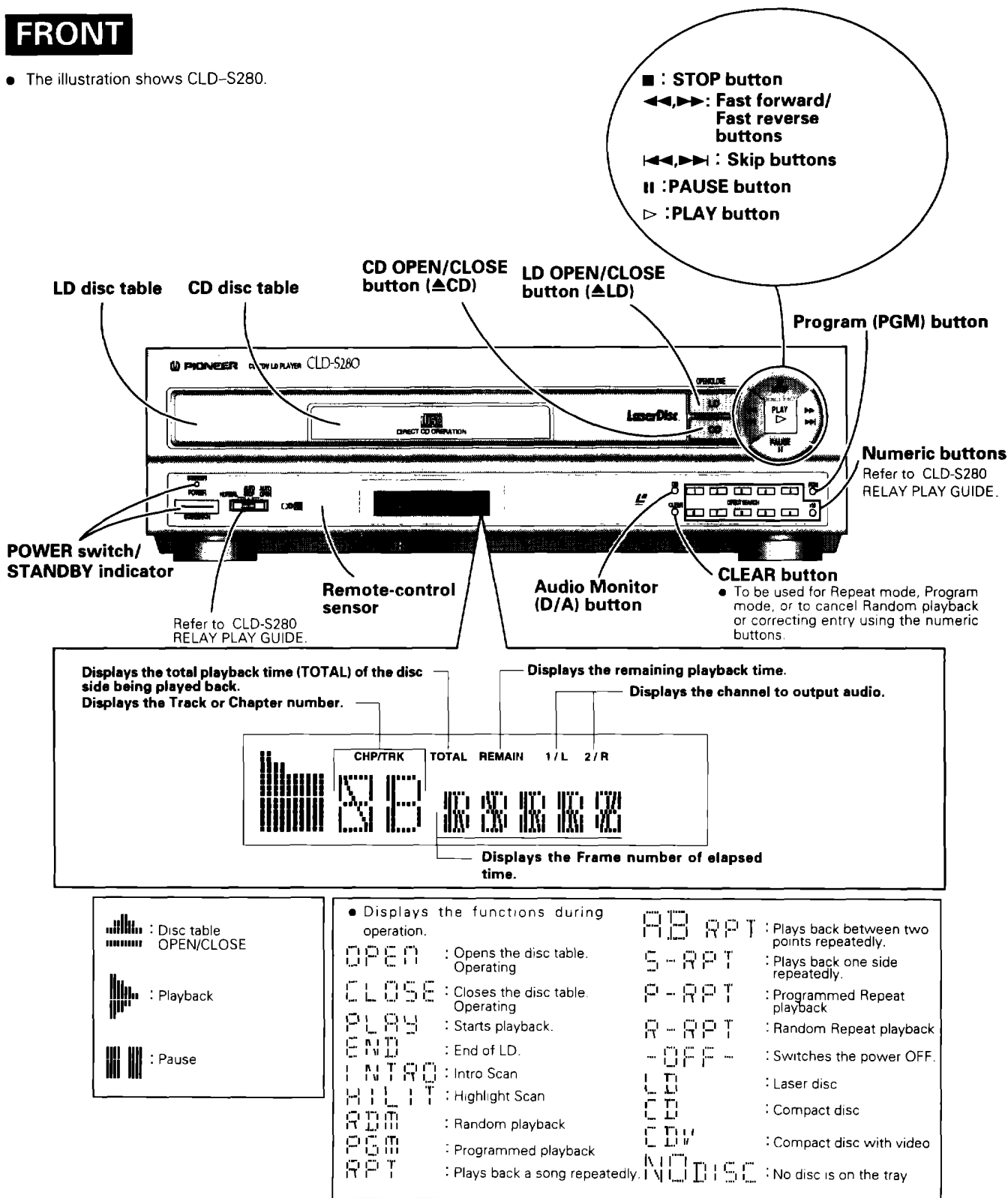
TRKG SERVO system: A signal flows in the order of T1 → T2 → T3 → T4.

RF VIDEO system: A signal flows in the order of RF1 → RF2 → V1 → V2.

8. PANEL FACILITIES

FRONT

- The illustration shows CLD-S280.



9. SPECIFICATIONS

General

System	LaserVision Disc system and Compact Disc digital audio system
Laser	Semiconductor laser: wavelength 780 nm
Power requirements:	
Flat blade 2-pin AC plug model	AC 110 - 240 V, 50/60 Hz
Round 2-pin AC plug model	AC 110 - 230 - 240 V, 50/60 Hz
Power consumption	30 W
Weight	5.7 kg
Dimensions	420 (W) x 387 (D) x 120 (H) mm (Not including protruding cables, etc.)
Operating temperature	+5°C to +35°C
Operating humidity	5% to 85% (no condensation)

Video Output (2 pairs)

Output level	1 Vp-p (75Ω when loaded, synchronous negative)
Jacks	RCA jacks

Audio Output (2 pairs)

Output level	
During analog audio output	200 mVrms (1 kHz, 40%)
During digital audio output	200 mVrms (1 kHz, -20 dB)
Number of channels	2
Jacks	RCA jacks

Digital audio characteristics

Frequency response	4 Hz to 20 kHz
S/N ratio	102 dB (EIAJ)
Dynamic range	92 dB (EIAJ)
Total harmonic distortion	0.0055%
Wow and flutter	Limit of measurement (±0.001% W. PEAK) or lower (EIAJ)

Specifications for LDs conforming to EIAJ.

Other Terminals

CONTROL IN	Minijack (3.5ø)
CONTROL OUT	Minijack (3.5ø) (CLD-S180 only)
RELAY PLAY CONTROL OUT	Minijack (3.5ø) (CLD-S280 only)
RELAY PLAY (AUDIO IN/VIDEO IN) ...	Both RCA jacks (CLD-S280 only)
VHF adapter	Both RCA jacks with DC jack

Accessories

Remote control unit	1
Size-AA (IEC R6P) dry cell batteries	2
Audio cord	1
Video cord	1
Power cord	1
Operating Instructions	1
RELAY PLAY GUIDE (CLD-S280 only)	1
Warranty card	1

NOTE:

The specifications and design of this product are subject to change without notice, due to improvement.

